MEMORANDUM

TO: Mr. Addison Rice

Anderson, Mulholland and Associates

DATE: August 8, 2016

FROM: R. Infante

FILE: 1607228-1607235-B

RE:

Data Validation Air samples

SDG: 1607235D; 1607235E; 1607235F; 1607235G; 1607228B

SUMMARY

Full validation was performed on the data for several gas samples analyzed for volatile organic compounds (full suite) and methanol by method Compendium Method TO-15: Determination Of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters And Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS), January, 1999. Methane analyzed by ASTM method D-1946-modified. Naphthalene by method Compendium Method TO-17: Determination of Volatile Organic Compounds in Ambient Air Using Active Sampling Onto Sorbent Tubes, January 1999. The samples were collected at the Bristol Myer Squib, Humacao, PR site on July 9-12, 2016 and submitted to Eurofins Air Toxics, Inc. of Folson, California that analyzed and reported the results under delivery groups (SDG) 1607235F; 1607235G; 1607235D; 1607235E; 1607228B.

The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: Compendium Method TO-15. Determination Of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters And Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS), January, 1999; Validating Air Samples. Volatile Organic Analysis of Ambient Air in Canisters by Method TO-15, (SOP # HW-31. Revision #4. October, 2006. The QC criteria of methods TO-17 and ASTM method D-1946-modified. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

In general the data is valid as reported and may be used for decision making purposes. The data results are acceptable for use. The following results were qualified as estimated (J) or (UJ) in samples:

- Ethanol concentration qualified as estimated (J) in samples 1607235E-08A to -13A due to blank spike duplicate % recovery outside method/laboratory performance limit.
- a-chlorotoluene concentration qualified as estimated (UJ) in samples 1607235D-01 to 1607235-06 and 1607235-14A due to initial calibration RSD and continuing calibration % difference did not meet the method performance criteria.
- 4-methyl-2-pentanone and bromoform qualified as estimated (J) in samples 1607235D-01 to 1607235-06 and 1607235-14A due to continuing calibration % difference did not meet the method performance criteria.

SAMPLES

The samples included in the review are listed below

Client Sample ID	Lab. Sample ID	Collected Date	Matrix	Analysis
==========			========	=======================================
B18IA-1	1607228B-01A	7/ 9/2016	Air	Naphthalene
B18IA-2	1607228B-02A	7/ 9/2016	Air	Naphthalene
B18IA-3	1607228B-03A	7/ 9/2016	Air	Naphthalene
B18IA-4	1607228B-04A	7/ 9/2016	Air	Naphthalene
B18IA-5	1607228B-05A	7/ 9/2016	Air	Naphthalene
B18IA-1D	1607228B-06A	7/ 9/2016	Air	Naphthalene
B18AA-070816	1607228B-08A	7/11/2016	Air	Naphthalene
B18SS-1	1607228B-09A	7/11/2016	Air	Naphthalene
B18SS-2	1607228B-10A	7/12/2016	Air	Naphthalene
B18SS-1D	1607228B-11A	7/11/2016	Аіг	Naphthalene
B18SS-3	1607228B-12A	7/11/2016	Air	Naphthalene
B18SS-4	1607228B-13A	7/12/2016	Air	Naphthalene
B18SS-5	1607228B-14A	7/12/2016	Air	Naphthalene
Field Blank	1607228B-15A	7/12/2016	Air	Naphthalene
B18IA-1	1607228D-01A	7/ 9/2016	Air	VOCs
B18IA-2	1607228D-02A	7/ 9/2016	Air	VOCs
B18IA-3	1607228D-03A	7/ 9/2016	Air	VOCs
B18IA-4	1607228D-04A	7/ 9/2016	Air	VOCs
B18IA-5	1607228D-05A	7/ 9/2016	Аіг	VOCs
B18IA-1D	1607228D-06A	7/ 9/2016	Air	VOCs
B18AA-070816	1607228D-14A	7/12/2016	Air	VOCs
B18SS-1	1607228E-08A	7/11/2016	Air	VOCs
B18SS-2	1607228E-19A	7/12/2016	Air	VOCs
B18SS-3	1607228E-10A	7/11/2016	Air	VOCs
B18SS-4	1607228E-11A	7/12/2016	Air	VOCs
B18SS-5	1607228E-12A	7/12/2016	Air	VOCs
B18SS-1D	1607228E-13A	7/11/2016	Air	VOCs
B18IA-1	46070005 044	71010010		
B18IA-2	1607228F-01A	7/ 9/2016	Air	Methanol
B18IA-3	1607228F-02A	7/ 9/2016	Air	Methanol
B18IA-4	1607228F-03A	7/ 9/2016	Air	Methanol
B18IA-5	1607228F-04A	7/ 9/2016	Air	Methanol
B18IA-1D	1607228F-05A	7/ 9/2016	Air	Methanol
B18SS-1	1607228F-06A	7/ 9/2016	Air	Methanol
	1607228F-08A	7/11/2016	Air	Methanol
B18SS-2 B18SS-3	1607228F-19A	7/12/2016	Air	Methanol
	1607228F-10A	7/11/2016	Air	Methanol
B18SS-4	1607228F-11A	7/12/2016	Air	Methanoi
B18SS-5	1607228F-12A	7/12/2016	Air	Methanol
B18SS-1D	1607228F-13A	7/11/2016	Air	Methanol
B18AA-070816	1607228F-14A	7/12/2016	Air	Methanoi

Client	Lab. Sample ID	Collected	Matrix	Analysis
Sample ID		Date		
=======================================	=======================================	=======		=======================================
B18IA-1	1607228G-01A	7/ 9/2016	Air	Methane
B18IA-2	1607228G-02A	7/ 9/2016	Air	Methane
B18IA-3	1607228G-03A	7/ 9/2016	Air	Methane
B18IA-4	1607228G-04A	7/ 9/2016	Air	Methane
B18IA-5	1607228G-05A	7/ 9/2016	Air	Methane
B18IA-1D	1607228G-06A	7/ 9/2016	Air	Methane
B18SS-1	1607228G-08A	7/11/2016	Air	Methane
B18SS-2	1607228G-19A	7/12/2016	Air	Methane
B18SS-3	1607228G-10A	7/11/2016	Air	Methane
B18SS-4	1607228G-11A	7/12/2016	Air	Methane
B18SS-5	1607228G-12A	7/12/2016	Air	Methane
B18SS-1D	1607228G-13A	7/11/2016	Air	Methane
B18AA-070816	1607228G-14A	7/12/2016	Air	Methane

REVIEW ELEMENTS

Sample data were reviewed for the following parameters, where applicable to the method

- Agreement of analysis conducted with chain of custody (COC) form
- o Holding time and sample preservation
- Gas chromatography/mass spectrometry (GC/MS) tunes
- o Initial and continuing calibrations
- o Method blanks/trip blanks/field blank
- o Canister cleaning certification criteria
- Surrogate spike recovery
- o Internal standard performance and retention times
- o Field duplicate results
- o Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) results
- o Quantitation limits and sample results

DISCUSSION

Agreement of Analysis Conducted with COC Request

Sample reports corresponded to the analytical request designated on the chain-of-custody form.

Information of the sample were accurate except in the cases described in the Data Review Worksheet. No action taken based of chain-of-custody information.

Holding Times and Sample Preservation

Sample preservation was acceptable except in the cases described in the Data Review Worksheet. Samples received in good conditions. No qualification of results made base on sample preservation.

Samples analyzed within method recommended holding time.

GC/MS Tunes

The frequency and abundance of bromofluorobenzene (BFB) tunes were within the QC acceptance criteria. All samples were analyzed within the tuning criteria associated with the method.

Initial and Continuing Calibrations

VOCs - (Method TO-15-full suite)

Initial calibration meets method performance criteria except for the cases described in the Data Review Worksheet. Ongoing accuracy of the instrument was determined by the analysis of a continuing calibration standard, continuing calibration meet the method performance criteria except for the cases described in the Data Review Worksheet.

Results for affected analytes were qualified estimated (J) or (UJ) in affected samples.

VOCs - (Method TO-15-methanol)

A one point initial calibration meets method performance criteria. Ongoing accuracy of the instrument was determined by the analysis of a continuing calibration standard, continuing calibration meet the method performance criteria.

VOCs - (Method TO-17-naphthalene)

Initial calibration meets method performance criteria. Ongoing accuracy of the instrument was determined by the analysis of a continuing calibration standard, continuing calibration meet the method performance criteria.

VOCs - (Method ASTM D-1946-modified - methane)

Initial calibration meets method performance criteria. Ongoing accuracy of the instrument was determined by the analysis of a continuing calibration standard, continuing calibration meet the method performance criteria

Method Blank/Trip Blank/Field Blank

Several VOCs TO-15 (full suite) analytes were detected in the method blanks analyzed below the reporting limit/action level. Laboratory qualified the results as estimated (J) in the method blanks. No further qualification made.

No sample analytes were detected in methods blanks analyzed for naphthalene, methanol and methane.

Summa canister met cleaning certification criteria.

Naphthalene was not detected above the reporting limit in the field blank analyzed for this data package. No trip/field blank analyzed with this data package for other analytes.

Surrogate Spike Recovery

The surrogate recoveries as per method TO-15, TO-17 and ASTM D-1946 were within the laboratory QC acceptance limits in all samples analyzed.

Internal Standard Performance

VOCs - TO-15 and TO-17

Samples were spiked with the method specified internal standard. Internal standard are performance and retention times met the QC acceptance criteria in all sample analyses and calibration standards.

Laboratory/Field Duplicate Results

Laboratory duplicates (LCS/LCSD) were analyzed as part of this data set. Target analytes meet the RPD performance criteria of \pm 25 % for analytes 5 x SQL .

LCS/LCSD Results

LCS/LCSD (blank spike) analyzed by the laboratory associated with this data package; % recoveries and RPD within laboratory and generally acceptable control limits control limits except for the cases described in the Data Review Worksheet. Results for analytes not meeting the % recovery criteria were qualified as estimated (J).

Quantitation Limits and Sample Results

Dilutions were not performed on samples analyzed (see worksheet).

Rafue Info

Calculations were spot checked.

Certification

The samples reported on SDG: 1607235D; 1607235E; 1607235F; 1607235G; and 1607228B described in the sample table were analyzed following standard procedures accepted by regulatory agencies. The quality control requirements met the methods criteria except in the occasions described in this document. The results are valid some of the results were qualified.

Rafael Infante

Chemist License 1888



Client Sample ID: B18IA-1 Lab ID#: 1607235D-01A

File Name: Dil. Factor:	20071909 1.65		of Collection: 7/9 of Analysis: 7/19	
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.16	0,62	0.82	3.1
Freon 114	0.16	Not Detected	1.2	Not Detected
Chloromethane	0.82	0.92	1.7	1.9
Vinyl Chloride	0.16	Not Detected	0.42	Not Detected
1,3-Butadiene	0.16	Not Detected	0.36	Not Detected
Bromomethane	0.82	Not Detected	3.2	Not Detected
Chloroethane	0.82	Not Detected	2.2	Not Detected
Freon 11	0.16	5.8	0.93	33
Ethanol	0.82	15	1.6	28
Freon 113	0.16	0.072 J	1.3	0.56 J
1,1-Dichloroethene	0,16	Not Detected	0.65	Not Detected
Acetone	0.82	11	2.0	26
2-Propanol	0.82	6.1	2.0	15
Carbon Disulfide	0.82	Not Detected	2.6	Not Detected
3-Chloropropene	0.82	Not Detected	2.6	Not Detected
Methylene Chloride	0.33	0.36	1.1	1.2
Methyl tert-butyl ether	0.16	Not Detected	0.59	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.65	Not Detected
Hexane	0.16	0,095 J	0.58	0.34 J
1,1-Dichloroethane	0.16	Not Detected	0.67	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.82	1.1 J	2.4	3.2
cis-1,2-Dichloroethene	0.16	Not Detected	0.65	Not Detected
Tetrahydrofuran	0.82	0.33 J	2.4	0.96 J
Chloroform	0.16	0.048 J	0.80	0.24 J
1,1,1-Trichloroethane	0.16	Not Detected	0.90	Not Detected
Cyclohexane	0.16	0.042 J	0.57	0.14 J
Carbon Tetrachloride	0.16	0.064 J	1.0	0.41 J
2,2,4-Trimethylpentane	0.82	Not Detected	3.8	Not Detected
Benzene	0.16	0.070 J	0.53	0.22 J
1,2-Dichloroethane	0.16	1.2	0.67	5.0
Heptane	0.16	Not Detected	0.68	Not Detected
Trichloroethene	0.16	0.59	0.89	3.2
1,2-Dichloropropane	0.16	Not Detected	0.76	Not Detected
1,4-Dioxane	0.16	Not Detected	0.59	Not Detected
Bromodichloromethane	0.16	Not Detected	1,1	Not Detected
cis-1,3-Dichloropropene	0.16	Not Detected	0.75	Not Detected
4-Methyl-2-pentanone	0.16	0.078 J	0.68	LOCIOR
Toluene	0.16	2.0	0.62	
trans-1,3-Dichloropropene	0.16	Not Detected	0.75 5	Not Detect
1,1,2-Trichloroethane	0.16	Not Detected	0.90	Rafachinime
Tetrachloroethene	0.16	Not Detected		Minds tecte
2-Hexanone	0.82	0.11 J	3.4	LIC. #diaga



Client Sample ID: B18IA-1 Lab ID#: 1607235D-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name: Dil. Factor:	20071909 1.65	Date of Collection: 7/9/16 7:02:00 PM Date of Analysis: 7/19/16 01:37 PM		
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.16	Not Detected	1.4	Not Detected
1,2-Dibromoethane (EDB)	0.16	Not Detected	1.3	Not Detected
Chlorobenzene	0.16	Not Detected	0.76	Not Detected
Ethyl Benzene	0.16	0,078 J	0.72	0.34 J
m,p-Xylene	0.16	0.19	0.72	0.83
o-Xylene	0.16	0,078 J	0.72	0.34 J
Styrene	0.16	0,035 J	0.70	0.15 J
Bromoform	0.16	Not Detected	1.7	Not Detected
Cumene	0.16	Not Detected	0.81	Not Detected
1,1,2,2-Tetrachloroethane	0.16	Not Detected	1.1	Not Detected
Propylbenzene	0.16	Not Detected	0.81	Not Detected
4-Ethyltoluene	0.16	Not Detected	0.81	Not Detected
1,3,5-Trimethylbenzene	0.16	Not Detected	0.81	Not Detected
1,2,4-Trimethylbenzene	0.16	0.040 J	0.81	0.20 J
1,3-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0,99	Not Detected
alpha-Chlorotoluene	0.16	Not Detected #J	0.85	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.99	Not Detected
1,2,4-Trichlorobenzene	0.82	Not Detected	6.1	Not Detected
Hexachlorobutadiene	0.82	Not Detected	8.8	Not Detected
Naphthalene	0.82	0.036 J	4.3	0.19 J

J = Estimated value.

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	118	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	102	70-130





Client Sample ID: B18IA-2 Lab ID#: 1607235D-02A

File Name: Dil. Factor:	20071910 1.71		of Collection: 7/9 of Analysis: 7/19	
	Rpt. Limit	Amount	Rpt. Limit	Amount
Compound	(ppbv)	(ppbv)	(ug/m3)	(ug/m3)
Freon 12	0.17	0.63	0.84	3.1
Freon 114	0.17	Not Detected	1.2	Not Detected
Chloromethane	0.86	0.88	1.8	1.8
Vinyl Chloride	0.17	Not Detected	0.44	Not Detected
1,3-Butadiene	0:17	Not Detected	0.38	Not Detected
Bromomethane	0.86	Not Detected	3.3	Not Detected
Chloroethane	0.86	Not Detected	2.2	Not Detected
Freon 11	0.17	7.9	0.96	44
Ethanol	0.86	25	1.6	48
Freon 113	0.17	0,075 J	1.3	0.58 J
1,1-Dichloroethene	0.17	Not Detected	0.68	Not Detected
Acetone	0.86	13	2.0	32
2-Propanol	0.86	14	2.1	33
Carbon Disulfide	0.86	Not Detected	2.7	Not Detected
3-Chloropropene	0.86	Not Detected	2.7	Not Detected
Methylene Chloride	0.34	0,39	1.2	1.4
Methyl tert-butyl ether	0.17	Not Detected	0.62	Not Detected
trans-1,2-Dichloroethene	0.17	Not Detected	0.68	Not Detected
Hexane	0.17	0.17	0.60	0.61
1,1-Dichloroethane	0.17	Not Detected	0.69	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.86	1.2 J	2.5	3.6
cis-1,2-Dichloroethene	0.17	Not Detected	0.68	Not Detected
Tetrahydrofuran	0.86	Not Detected	2.5	Not Detected
Chloroform	0.17	0.049 J	0.83	0,24 J
1,1,1-Trichloroethane	0.17	Not Detected	0.93	Not Detected
Cyclohexane	0.17	0.20	0.59	0.68
Carbon Tetrachloride	0,17	0.061 J	1.1	0.38 J
2,2,4-Trimethylpentane	0.86	Not Detected	4.0	Not Detected
Benzene	0.17	0.18	0.55	0.56
1,2-Dichloroethane	0.17	1.1	0.69	4.4
Heptane	0.17	0.34	0.70	1.4
Trichloroethene	0.17	0.39	0.92	2.1
1,2-Dichloropropane	0.17	Not Detected	0.79	Not Detected
1,4-Dioxane	0.17	Not Detected	0.62	Not Detected
Bromodichloromethane	0.17	Not Detected	1.1	Not Detected
cis-1,3-Dichloropropene	0.17	Not Detected	0.78	Not Detected
4-Methyl-2-pentanone	0.17	0.18 J0	0.70	0.75.10
Toluene	0,17	2.9	0.64	OCHO A
trans-1,3-Dichloropropene	0.17	Not Detected	0.78	Not Detect
1,1,2-Trichloroethane	0.17	Not Detected	0.93	Not Detected
Tetrachloroethene	0.17	Not Detected	1.2	Not Detected
2-Hexanone	0.86	0.13 J	3.5	LIC.# 1888



Client Sample ID: B18IA-2 Lab ID#: 1607235D-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name: Dil. Factor:	20071910 1.71	Date of Collection: 7/9/16 6:49: Date of Analysis: 7/19/16 02:24		
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.17	Not Detected	1.4	Not Detected
1,2-Dibromoethane (EDB)	0.17	Not Detected	1.3	Not Detected
Chlorobenzene	0.17	Not Detected	0.79	Not Detected
Ethyl Benzene	0.17	0.11 J	0.74	0.46 J
m,p-Xylene	0.17	0.29	0.74	1.2
o-Xylene	0.17	0.12 J	0.74	0.52 J
Styrene	0.17	0.069 J	0.73	0.29 J
Bromoform	0.17	Not Detected	1.8	Not Detected
Cumene	0.17	Not Detected	0.84	Not Detected
1,1,2,2-Tetrachloroethane	0.17	Not Detected	1.2	Not Detected
Propylbenzene	0.17	0.044 J	0.84	0.21 J
4-Ethyltoluene	0.17	0,13 J	0.84	0.66 J
1,3,5-Trimethylbenzene	0,17	0.060 J	0.84	0.30 J
1,2,4-Trimethylbenzene	0.17	0.17 J	0.84	0.82 J
1,3-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,4-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
alpha-Chlorotoluene	0.17	Not Detected リプ	0.88	Not Detected
1,2-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,2,4-Trichlorobenzene	0.86	Not Detected	6.3	Not Detected
Hexachlorobutadiene	0.86	Not Detected	9.1	Not Detected
Naphthalene	0.86	0.030 J	4.5	0.16 J

J = Estimated value.

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	122	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	92	70-130



J0 = Estimated value due to bias in the CCV.



Client Sample ID: B18IA-3 Lab ID#: 1607235D-03A

File Name: Dil. Factor:	20071911 1.61		of Collection: 7/ of Analysis: 7/1	/9/16 6:27:00 PM 9/16 03:11 PM
	Rpt. Limit	Amount	Rpt. Limit	Amount
Compound	(ppbv)	(ppbv)	(ug/m3)	(ug/m3)
Freon 12	0.16	0,62	0.80	3.0
Freon 114	0.16	Not Detected	1.1	Not Detected
Chloromethane	0.80	0.85	1.7	1.8
Vinyl Chloride	0.16	Not Detected	0.41	Not Detected
1,3-Butadiene	0.16	Not Detected	0.36	Not Detected
Bromomethane	0.80	Not Detected	3.1	Not Detected
Chloroethane	0.80	Not Detected	2.1	Not Detected
Freon 11	0.16	2,4	0.90	14
Ethanol	0,80	12	1.5	24
Freon 113	0.16	0.12 J	1.2	0.92 J
1,1-Dichloroethene	0.16	Not Detected	0.64	Not Detected
Acetone	0.80	9.9	1.9	24
2-Propanol	0.80	4.2	2.0	10
Carbon Disulfide	0.80	0.086 J	2.5	0.27 J
3-Chloropropene	0.80	Not Detected	2.5	Not Detected
Methylene Chloride	0.32	0.19 J	1.1	0.66 J
Methyl tert-butyl ether	0.16	Not Detected	0.58	Not Detected
rans-1,2-Dichloroethene	0.16	Not Detected	0.64	Not Detected
Hexane	0.16	0.044 J	0.57	0.15 J
1,1-Dichloroethane	0.16	Not Detected	0.65	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.80	1.1 J	2.4	3.2
sis-1,2-Dichloroethene	0.16	Not Detected	0.64	Not Detected
Fetrahydrofuran	0.80	Not Detected	2.4	Not Detected
Chloroform	0.16	Not Detected	0.79	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.88	Not Detected
Cyclohexane	0.16	Not Detected	0.55	Not Detected
Carbon Tetrachloride	0.16	0.072 J	1.0	0.46 J
2,2,4-Trimethylpentane	0.80	Not Detected	3.8	Not Detected
Benzene	0.16	0.052 J	0.51	0.17 J
1,2-Dichloroethane	0.16	0.37	0.65	1.5
-leptane	0.16	Not Detected	0.66	Not Detected
Гrichloroethene	0.16	0.28	0.86	1.5
1,2-Dichloropropane	0.16	Not Detected	0.74	Not Detected
1,4-Dioxane	0.16	Not Detected	0.58	Not Detected
Bromodichloromethane	0.16	Not Detected	1.1	Not Detected
sis-1,3-Dichtoropropene	0.16	Not Detected	0.73	ACCUMANCE.
I-Methyl-2-pentanone	0.16	Not Detected	0.66	Not Detector
Toluene	0.16	1.2	/	
rans-1,3-Dichloropropene	0.16	Not Detected	0.73	Not Detected
1,1,2-Trichloroethane	0.16	Not Detected	0.88	Parisel Infinite Not Detected Not Detected
Tetrachloroethene	0.16	Not Detected		CITOL II SOON
2-Hexanone	0.80	0.10 J	3,3	Not Detected
and the second second second		00	5,5	COLICENC
	Pa	ge 1		0084 of 06



Client Sample ID: B18IA-3 Lab ID#: 1607235D-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	20071911	Date of Collection: 7/9/16 6:27:00 PM Date of Analysis: 7/19/16 03:11 PM			
Dil. Factor:	1.61				
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)	
Dibromochloromethane	0.16	Not Detected	1.4	Not Detected	
1,2-Dibromoethane (EDB)	0.16	Not Detected	1.2	Not Detected	
Chlorobenzene	0.16	Not Detected	0.74	Not Detected	
Ethyl Benzene	0.16	Not Detected	0.70	Not Detected	
m,p-Xylene	0.16	0.14 J	0.70	0,60 J	
o-Xylene	0.16	0.067 J	0.70	0.29 J	
Styrene	0.16	0.030 J	0.68	0.12 J	
Bromoform	0.16	Not Detected	1.7	Not Detected	
Cumene	0.16	Not Detected	0.79	Not Detected	
1,1,2,2-Tetrachloroethane	0.16	Not Detected	1.1	Not Detected	
Propylbenzene	0.16	Not Detected	0.79	Not Detected	
4-Ethyltoluene	0.16	Not Detected	0.79	Not Detected	
1,3,5-Trimethylbenzene	0.16	Not Detected	0.79	Not Detected	
1,2,4-Trimethylbenzene	0.16	Not Detected	0.79	Not Detected	
1,3-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected	
1,4-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected	
alpha-Chlorotoluene	0.16	Not Detected VJ	0.83	Not Detected	
1,2-Dichlorobenzene	0.16	Not Detected	0.97	Not Detected	
1,2,4-Trichlorobenzene	0.80	Not Detected	6.0	Not Detected	
Hexachlorobutadiene	0.80	Not Detected	8.6	Not Detected	
Naphthalene	0.80	0.024 J	4.2	0.12 J	

J = Estimated value:

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	119	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	102	70-130





Client Sample ID: B18IA-4 Lab ID#: 1607235D-04A

File Name: Dil. Factor:	20071912 1.60		of Collection: 7/9 of Analysis: 7/19	
	Rpt. Limit	Amount	Rpt Limit	Amount
Compound	(ppbv)	(ppbv)	(ug/m3)	(ug/m3)
Freon 12	0.16	0.65	0.79	3.2
Freon 114	0.16	Not Detected	1.1	Not Detected
Chloromethane	0.80	0.96	1.6	2.0
Vinyl Chloride	0.16	Not Detected	0.41	Not Detected
1,3-Butadiene	0.16	Not Detected	0.35	Not Detected
Bromomethane	0.80	Not Detected	3.1	Not Detected
Chloroethane	0.80	Not Detected	2.1	Not Detected
Freon 11	0.16	3.3	0.90	18
Ethanol	0.80	29	1.5	54
Freon 113	0.16	0.082 J	1.2	0.63 J
1,1-Dichloroethene	0.16	Not Detected		
Acetone	0.80	13	0.63	Not Detected
		20	1.9	32
2-Propanol Carbon Disulfide	0.80		2.0	50
	0.80	Not Detected	2.5	Not Detected
3-Chloropropene	0.80	Not Detected	2.5	Not Detected
Methylene Chloride	0.32	0.22 J	1.1	0.75 J
Methyl tert-butyl ether	0.16	Not Detected	0.58	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.63	Not Detected
Hexane	0.16	0.044 J	0.56	0.16 J
1,1-Dichloroethane	0.16	Not Detected	0.65	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.80	0.74 J J	2.4	2.2 J
cis-1,2-Dichloroethene	0.16	Not Detected	0.63	Not Detected
Tetrahydrofuran	0.80	Not Detected	2.4	Not Detected
Chloroform	0.16	0.032 J	0.78	0.16 J
1,1,1-Trichloroethane	0.16	Not Detected	0.87	Not Detected
Cyclohexane	0.16	Not Detected	0.55	Not Detected
Carbon Tetrachloride	0.16	0:11 J	1.0	0.69 J
2,2,4-Trimethylpentane	0.80	Not Detected	3.7	Not Detected
Benzene	0.16	0.054 J	0.51	0.17 J
1,2-Dichloroethane	0.16	0.88	0.65	3.6
Heptane	0.16	Not Detected	0.66	Not Detected
Trichloroethene	0.16	0.66	0.86	3.6
1,2-Dichloropropane	0.16	Not Detected	0.74	Not Detected
1,4-Dioxane	0.16	Not Detected	0.58	Not Detected
Bromodichloromethane	0.16	Not Detected	1.1	Not Detected
cis-1,3-Dichloropropene	0.16	Not Detected	0.73	COCIADA
4-Methyl-2-pentanone	0.16	Not Detected	0.66	Not Detail
Toluene	0.16	4.0	0.60	15
trans-1,3-Dichloropropene	0.16	Not Detected	0.73	Infante \
1,1,2-Trichloroethane	0.16	Not Detected	0.73 0.87	Mender
Tetrachloroethene	0.16	Not Detected	44 6	No. District
2-Hexanone	0.80	Not Detected	3.3	Not Detected
Z I ICAGIIONG	0.00	Not Deferred	3.3	COLLOSING



Client Sample ID: B18IA-4 Lab ID#: 1607235D-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name: Dil. Factor:	20071912 1.60	Date of Collection: 7/9/16 6:35:00 PDate of Analysis: 7/19/16 03:50 PM		
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.16	Not Detected	1.4	Not Detected
1,2-Dibromoethane (EDB)	0.16	Not Detected	1.2	Not Detected
Chlorobenzene	0.16	Not Detected	0.74	Not Detected
Ethyl Benzene	0.16	0.18	0.69	0.79
m,p-Xylene	0,16	0.47	0.69	2.0
o-Xylene	0.16	0.17	0.69	0.76
Styrene	0.16	0.052 J	0.68	0.22 J
Bromoform	0.16	Not Detected	1.6	Not Detected
Cumene	0.16	Not Detected	0.79	Not Detected
1,1,2,2-Tetrachloroethane	0.16	Not Detected	1.1	Not Detected
Propylbenzene	0.16	Not Detected	0.79	Not Detected
4-Ethyltoluene	0.16	0.041 J	0.79	0.20 J
1,3,5-Trimethylbenzene	0.16	Not Detected	0.79	Not Detected
1,2,4-Trimethylbenzene	0.16	0.042 J	0.79	0.20 J
1,3-Dichlorobenzene	0.16	Not Detected	0.96	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.96	Not Detected
alpha-Chlorotoluene	0.16	Not Detected [J.]	0.83	Not Detected
1,2-Dichlorobenzene	0,16	Not Detected	0.96	Not Detected
1,2,4-Trichlorobenzene	0.80	Not Detected	5.9	Not Detected
Hexachlorobutadiene	0.80	Not Detected	8.5	Not Detected
Naphthalene	0.80	0.045 J	4.2	0.24 J

J = Estimated value.

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	126	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	93	70-130





Client Sample ID: B18IA-5 Lab ID#: 1607235D-05A

File Name:	20071913		of Collection: 7/9	
Dil. Factor:	1.67	Date	of Analysis: 7/19	/16 04:29 PM
0	Rpt. Limit	Amount	Rpt. Limit	Amount
Compound	(ppbv)	(ppbv)	(ug/m3)	(ug/m3)
Freon 12	0:17	0.67	0.82	3.3
Freon 114	0.17	Not Detected	1.2	Not Detected
Chloromethane	0.84	1.0	1.7	2.1
Vinyl Chloride	0.17	Not Detected	0.43	Not Detected
1,3-Butadiene	0,17	Not Detected	0.37	Not Detected
Bromomethane	0.84	Not Detected	3.2	Not Detected
Chloroethane	0.84	Not Detected	2.2	Not Detected
Freon 11	0.17	2.9	0.94	16
Ethanol	0.84	27	1.6	51
Freon 113	0.17	0.080 J	1.3	0.62 J
1,1-Dichloroethene	0.17	Not Detected	0.66	Not Detected
Acetone	0.84	11	2.0	26
2-Propanol	0.84	12	2.0	31
Carbon Disulfide	0.84	Not Detected	2.6	Not Detected
3-Chloropropene	0.84	Not Detected	2.6	Not Detected
Methylene Chloride	0,33	0.30 J	1.2	1.0 J
Methyl tert-butyl ether	0.17	Not Detected	0.60	Not Detected
trans-1,2-Dichloroethene	0.17	Not Detected	0.66	Not Detected
Hexane	0.17	0.046 J	0.59	0.16 J
1,1-Dichloroethane	0.17	Not Detected	0.68	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.84	0.66 J J	2.5	1.9 J
cis-1,2-Dichloroethene	0.17	Not Detected	0.66	Not Detected
Tetrahydrofuran	0.84	Not Detected	2.5	Not Detected
Chloroform	0.17	0.043 J	0.82	0.21 J
1,1,1-Trichloroethane	0.17	Not Detected	0.91	Not Detected
Cyclohexane	0.17	0.033 J	0.57	0.11 J
Carbon Tetrachloride	0.17	0.062 J	1.0	0.39 J
2,2,4-Trimethylpentane	0.84	Not Detected	3.9	Not Detected
Benzene 1,2-Dichloroethane	0.17 0.17	0.079 J	0.53	0.25 J
		0.80	0.68	3.2
Heptane Trichloroethene	0.17	0.088 J	0.68	0.36 J
1,2-Dichloropropane	0.17	0.54	0.90	2.9
1,4-Dioxane	0.17	Not Detected	0.77	Not Detected
Bromodichloromethane	0.17 0.17	Not Detected Not Detected	0.60	Not Detected
cis-1,3-Dichloropropene			1.1	Not Detected
	0.17	Not Detected	0.76	Not Detected
4-Methyl-2-pentanone Toluene	0.17 0.17	Not Detected 3.6	0.68	Partie of the contract of the
trans-1,3-Dichloropropene	0.17	Not Detected	0.63	No. Carlo
1,1,2-Trichloroethane	0.17	Not Detected	0.76	Not Detect
Tetrachloroethene	0.17		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Menulez
2-Hexanone	0.84	Not Detected	1.1	LICNOT Detected
2-1 lexalibite	0.04	Not Detected	3.4 (•)	Not betered



Client Sample ID: B18IA-5 Lab ID#: 1607235D-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name: Dil. Factor:	20071913 1.67	Date of Collection: 7/9/16 6:44:00 Date of Analysis: 7/19/16 04:29 PM		
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.17	Not Detected	1.4	Not Detected
1,2-Dibromoethane (EDB)	0.17	Not Detected	1.3	Not Detected
Chlorobenzene	0,17	Not Detected	0.77	Not Detected
Ethyl Benzene	0,17	0.10 J	0.72	0.45 J
m,p-Xylene	0.17	0,31	0.72	1.3
o-Xylene	0.17	0.12 J	0.72	0.53 J
Styrene	0.17	0.062 J	0.71	0.26 J
Bromoform	0.17	Not Detected	1.7	Not Detected
Cumene	0.17	Not Detected	0.82	Not Detected
1,1,2,2-Tetrachloroethane	0.17	Not Detected	1.1	Not Detected
Propylbenzene	0.17	Not Detected	0.82	Not Detected
4-Ethyltoluene	0.17	0.039 J	0.82	0.19 J
1,3,5-Trimethylbenzene	0.17	Not Detected	0.82	Not Detected
1,2,4-Trimethylbenzene	0.17	0,041 J	0.82	0.20 J
1,3-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,4-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
alpha-Chlorotoluene	0.17	Not Detected 1/7	0.86	Not Detected
1,2-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,2,4-Trichlorobenzene	0.84	Not Detected	6.2	Not Detected
Hexachlorobutadiene	0.84	Not Detected	8.9	Not Detected

J = Estimated value:

Naphthalene

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	127	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	90	70-130

0.031 J

4.4

0.84



0.16 J



Client Sample ID: B18IA-1D Lab ID#: 1607235D-06A

File Name: Dil. Factor:	20071914 1.66		of Collection: 7/9 of Analysis: 7/19	
	Rpt. Limit	Amount	Rpt. Limit	Amount
Compound	(ppbv)	(ppbv)	(ug/m3)	(ug/m3)
Freon 12	0.17	0.59	0.82	2.9
Freon 114	0.17	Not Detected	1.2	Not Detected
Chloromethane	0.83	0.96	1.7	2.0
Vinyl Chloride	0.17	Not Detected	0.42	Not Detected
1,3-Butadiene	0.17	Not Detected	0.37	Not Detected
Bromomethane	0.83	Not Detected	3.2	Not Detected
Chloroethane	0.83	Not Detected	2.2	Not Detected
Freon 11	0.17	4.9	0.93	27
Ethanol	0.83	12	1.6	23
Freon 113	0.17	0.071 J	1.3	0.54 J
1,1-Dichloroethene	0.17	Not Detected	0.66	Not Detected
Acetone	0.83	14	2.0	33
2-Propanol	0.83	5.4	2.0	13
Carbon Disulfide	0.83	0.086 J	2.6	0.27 J
3-Chloropropene	0.83	Not Detected	2.6	Not Detected
Methylene Chloride	0.33	0.35	1.2	1.2
Methyl tert-butyl ether	0.17	Not Detected	0.60	Not Detected
rans-1,2-Dichloroethene	0.17	Not Detected	0.66	Not Detected
Hexane	0.17	0.14 J	0.58	0.48 J
1,1-Dichloroethane	0.17	Not Detected	0.67	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.83	2.6 1	2.4	7.6
cis-1,2-Dichloroethene	0.17	Not Detected	0.66	Not Detected
Tetrahydrofuran	0.83	Not Detected	2.4	Not Detected
Chloroform	0.17	0.044 J	0.81	0.21 J
1,1,1-Trichloroethane	0.17	Not Detected	0.90	Not Detected
Cyclohexane	0.17	0.034 J	0.57	0.12 J
Carbon Tetrachloride	0.17	0.062 J	1.0	0.39 J
2,2,4-Trimethylpentane	0.83	Not Detected	3.9	Not Detected
Benzene	0.17	0.091 J	0.53	0.29 J
1,2-Dichloroethane	0.17	1.2	0.67	4.8
Heptane	0.17	0.27	0.68	1.1
Trichloroethene	0.17	0.54	0.89	2.9
1,2-Dichloropropane	0.17	Not Detected	0.77	Not Detected
1,4-Dioxane	0.17	Not Detected	0.60	Not Detected
3romodichtoromethane	0.17	Not Detected	1.1	Not Detected
cis-1,3-Dichloropropene	0.17	Not Detected	0.75	Not Detected
4-Methyl-2-pentanone	0.17	0.087 J	0.68	SE MILLION
Toluene	0.17	2,1	0.62 /	7.9
rans-1,3-Dichloropropene	0.17	Not Detected	0.75	Not Detacted
1,1,2-Trichloroethane	0.17	Not Detected	0.75	Not Detected
Tetrachloroethene	0.17	Not Detected	1.1	Nat Detected
?-Hexanone	0.83	0.099 J		0.40 J 0183 of 06
			/	9/16



Client Sample ID: B18IA-1D Lab ID#: 1607235D-06A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name: Dil. Factor:	20071914 1.66	Date of Collection: 7/9/16 7:02:00 PM Date of Analysis: 7/19/16 05:09 PM		
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.17	Not Detected	1.4	Not Detected
1,2-Dibromoethane (EDB)	0.17	Not Detected	1.3	Not Detected
Chlorobenzene	0,17	Not Detected	0.76	Not Detected
Ethyl Benzene	0,17	0.058 J	0.72	0.25 J
m,p-Xylene	0.17	0.17	0.72	0.75
o-Xylene	0.17	0,060 J	0.72	0.26 J
Styrene	0,17	0.041 J	0.71	0.18 J
Bromoform	0,17	Not Detected	1.7	Not Detected
Cumene	0.17	Not Detected	0.82	Not Detected
1,1,2,2-Tetrachloroethane	0.17	Not Detected	1.1	Not Detected
Propylbenzene	0.17	Not Detected	0.82	Not Detected
4-Ethyltoluene	0.17	Not Detected	0.82	Not Detected
1,3,5-Trimethylbenzene	0.17	Not Detected	0.82	Not Detected
1,2,4-Trimethylbenzene	0.17	Not Detected	0.82	Not Detected
1,3-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,4-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
alpha-Chlorotoluene	0.17	Not Detected √J	0.86	Not Detected
1,2-Dichlorobenzene	0.17	Not Detected	1.0	Not Detected
1,2,4-Trichlorobenzene	0.83	Not Detected	6.2	Not Detected
Hexachlorobutadiene	0.83	Not Detected	8.8	Not Detected
Naphthalene	0.83	0.035 J	4.4	0.18 J

J = Estimated value.

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	121	70-130
Toluene-d8	106	70-130
4-Bromofluorobenzene	93	70-130





Client Sample ID: B18SS-1 Lab ID#: 1607235E-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name: Dil. Factor:	p071920 2.40		of Collection: 7/1 of Analysis: 7/19	
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1,2	0,48 J	5.9	2,4 J
Freon 114	1.2	Not Detected	8.4	Not Detected
Chloromethane	12	Not Detected	25	Not Detected
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
1,3-Butadiene	1.2	Not Detected	2.6	Not Detected
Bromomethane	12	Not Detected	47	Not Detected
Chloroethane	4.8	Not Detected	13	Not Detected
Freon 11	1.2	1.9	6.7	10
Ethanol	4.8	16]	9.0	30
Freon 113	1.2	Not Detected	9.2	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Acetone	12	26	28	62
2-Propanol	4.8	5.8	12	14
Carbon Disulfide	4.8	Not Detected	15	Not Detected
3-Chloropropene	4.8	Not Detected	15	Not Detected
Methylene Chloride	12	Not Detected	42	Not Detected
Methyl tert-butyl ether	4.8	Not Detected	17	Not Detected
rans-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Hexane	1.2	Not Detected	4.2	Not Detected
1,1-Dichloroethane	1.2	Not Detected	4.8	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.8	5.2	14	15
cis-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Tetrahydrofuran	1.2	Not Detected	3.5	Not Detected
Chloroform	1.2	Not Detected	5.8	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.5	Not Detected
Cyclohexane	1.2	Not Detected	4.1	Not Detected
Carbon Tetrachloride	1.2	Not Detected	7.6	
2,2,4-Trimethylpentane	1.2	0.21 J	7.6 5.6	Not Detected
Benzene	1.2	0.36 J	3.8	0,99 J
1,2-Dichloroethane	1.2	Not Detected	4.8	1.2 J
Heptane	1.2	Not Detected		Not Detected
Frichloroethene	1.2		4.9	Not Detected
1,2-Dichloropropane	1.2	Not Detected	6.4	Not Detected
1,4-Dioxane	4.8	Not Detected	5.5	Not Detected
3romodichloromethane	1.2	Not Detected	17	Not Detected
		Not Detected	8.0	Not Detected
ris-1,3-Dichloropropene	1.2	Not Detected	5.4	Not Detected
1-Methyl-2-pentanone	1.2	Not Detected	4.9	social apected
Toluene	1.2	0.63 J	4.5	74
rans-1,3-Dichloropropene	1.2	Not Detected	5.4	Not Detect
I,1,2-Trichloroethane	1.2	Not Detected	6.5	infact defaute
Tetrachloroethene	1.2	Not Detected	8.1 32	Nor Detected
?-Hexanone	4.8	Not Detected	20 ()	LICNOT Detected



Client Sample ID: B18SS-1 Lab ID#: 1607235E-08A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name: Dil. Factor:	p071920 2.40	Date of Collection: 7/11/16 6:00: Date of Analysis: 7/19/16 10:44		
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1,2	Not Detected	10	Not Detected
1,2-Dibromoethane (EDB)	1,2	Not Detected	9.2	Not Detected
Chlorobenzene	1.2	Not Detected	5.5	Not Detected
Ethyl Benzene	1.2	Not Detected	5.2	Not Detected
m,p-Xylene	1,2	0.34 J	5.2	1.5 J
o-Xylene	1.2	Not Detected	5.2	Not Detected
Styrene	1.2	Not Detected	5.1	Not Detected
Bromoform	1,2	Not Detected	12	Not Detected
Cumene	1,2	Not Detected	5.9	Not Detected
1,1,2,2-Tetrachloroethane	1,2	Not Detected	8.2	Not Detected
Propylbenzene	1.2	Not Detected	5.9	Not Detected
4-Ethyltoluene	1.2	Not Detected	5.9	Not Detected
1,3,5-Trimethylbenzene	1.2	Not Detected	5.9	Not Detected
1,2,4-Trimethylbenzene	1.2	0.45 J	5.9	2.2 J
1,3-Dichlorobenzene	1.2	Not Detected	7.2	Not Detected
1,4-Dichtorobenzene	1.2	Not Detected	7.2	Not Detected
alpha-Chlorotoluene	1.2	Not Detected	6.2	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.2	Not Detected
1,2,4-Trichlorobenzene	4.8	Not Detected	36	Not Detected
Hexachlorobutadiene	4.8	Not Detected	51	Not Detected
Naphthalene	2.4	0.15 J	12	0.77 J

J = Estimated value:

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	110	70-130
4-Bromofluorobenzene	91	70-130





Client Sample ID: B18SS-2 Lab ID#: 1607235E-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name: Dil. Factor:	p071921 2.38		of Collection: 7/19 of Analysis: 7/19	
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.2	0.51 J	5.9	2,5 J
Freon 114	1.2	Not Detected	8.3	Not Detected
Chloromethane	12	Not Detected	24	Not Detected
Vinyl Chloride	1,2	Not Detected	3.0	Not Detected
1,3-Butadiene	1.2	Not Detected	2.6	Not Detected
Bromomethane	12	Not Detected	46	Not Detected
Chloroethane	4.8	Not Detected	12	Not Detected
Freon 11	1.2	1,3	6.7	7.6
Ethanol	4.8	18 7	9.0	33
Freon 113	1.2	Not Detected	9.1	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.7	Not Detected
Acetone	12	13	28	31
2-Propanol	4.8	15	12	37
Carbon Disulfide	4.8	Not Detected	15	Not Detected
3-Chloropropene	4.8	Not Detected	15	Not Detected
Methylene Chloride	12	Not Detected	41	Not Detected
Methyl tert-butyl ether	4.8	Not Detected	17	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.7	Not Detected
Hexane	1.2	Not Detected	4.2	Not Detected
1,1-Dichloroethane	1.2	Not Detected	4.8	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.8	2.1 J	14	6.2 J
cis-1,2-Dichloroethene	1.2	Not Detected	4.7	Not Detected
Tetrahydrofuran	1.2	Not Detected	3.5	Not Detected
Chloroform	1.2	Not Detected	5.8	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.5	Not Detected
Cyclohexane	1.2	Not Detected	4,1	Not Detected
Carbon Tetrachloride	1.2	Not Detected	7.5	Not Detected
2,2,4-Trimethylpentane	1.2	0.20 J	7.5 5.6	0.95 J
Benzene	1.2	0.32 J	3.8	1:0 J
1,2-Dichloroethane	1.2	0.32 J 0.26 J	3.8 4.8	1.0 J
Heptane	1.2			
•	1.2	Not Detected Not Detected	4.9	Not Detected
Frichloroethene			6.4	Not Detected
1,2-Dichloropropane 1,4-Dioxane	1,2 4,8	Not Detected	5.5	Not Detected
1,4-Dioxane Bromodichloromethane	1.2	Not Detected Not Detected	17	Not Detected
			8.0	Not Detected
cis-1,3-Dichtoropropene	1.2	Not Detected	5.4	Not-Detected
4-Methyl-2-pentanone	1.2	Not Detected	4.9	OF MANAGER CO.
Foluene	1.2	1.8	4.5	
trans-1,3-Dichloropropene	1.2	Not Detected	5.4	Not Detected
1,1,2-Trichloroethane	1.2	Not Detected	6.5	Not Detected
Tetrachloroethene	1.2	0.38 J	8.1	LIC 2 Page
2-Hexanone	4.8	Not Detected	19	Not Detected
		ge 1	/:	The same of the sa



Client Sample ID: B18SS-2 Lab ID#: 1607235E-09A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name: Dil. Factor:	p071921 2.38			n: 7/12/16 7:37:00 PM 7/19/16 11:10 PM	
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)	
Dibromochloromethane	1,2	Not Detected	10	Not Detected	
1,2-Dibromoethane (EDB)	1.2	Not Detected	9.1	Not Detected	
Chlorobenzene	1,2	Not Detected	5.5	Not Detected	
Ethyl Benzene	1.2	Not Detected	5.2	Not Detected	
m,p-Xylene	1.2	Not Detected	5.2	Not Detected	
o-Xylene	1.2	Not Detected	5.2	Not Detected	
Styrene	1.2	Not Detected	5,1	Not Detected	
Bromoform	1.2	Not Detected	12	Not Detected	
Cumene	1.2	Not Detected	5.8	Not Detected	
1,1,2,2-Tetrachloroethane	1.2	Not Detected	8.2	Not Detected	
Propylbenzene	1.2	Not Detected	5.8	Not Detected	
4-Ethyltoluene	1.2	Not Detected	5.8	Not Detected	
1,3,5-Trimethylbenzene	1.2	Not Detected	5.8	Not Detected	
1,2,4-Trimethylbenzene	1.2	Not Detected	5.8	Not Detected	
1,3-Dichlorobenzene	1.2	Not Detected	7.2	Not Detected	
1,4-Dichlorobenzene	1.2	Not Detected	7.2	Not Detected	
alpha-Chiorotoluene	1.2	Not Detected	6.2	Not Detected	
1,2-Dichlorobenzene	1.2	Not Detected	7.2	Not Detected	
1,2,4-Trichlorobenzene	4.8	Not Detected	35	Not Detected	
Hexachlorobutadiene	4.8	Not Detected	51	Not Detected	
Naphthalene	2.4	Not Detected	12	Not Detected	

J = Estimated value

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Limits
Toluene-d8	103	70-130
1,2-Dichloroethane-d4	105	70-130
4-Bromofluorobenzene	95	70-130





Client Sample ID: B18SS-3 Lab ID#: 1607235E-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name: Dil. Factor:	p071922 2.40		of Collection: 7/10 of Analysis: 7/19	
	Rpt. Limit	Amount	Rpt. Limit	Amount
Compound	(ppbv)	(ppbv)	(ug/m3)	(ug/m3)
Freon 12	1.2	0.51 J		
Freon 114	1.2	Not Detected	5.9	2.5 J
Chloromethane	12	Not Detected	8.4	Not Detected
Vinyl Chloride	1.2	Not Detected	25	Not Detected
1,3-Butadiene	1.2		3.1	Not Detected
Bromomethane		Not Detected	2.6	Not Detected
	12	Not Detected	47	Not Detected
Chloroethane	4.8	Not Detected	13	Not Detected
Freon 11	1.2	0,74 J	6.7	4.2 J
Ethanol	4.8	24 J	9.0	45
Freon 113	1.2	Not Detected	9.2	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Acetone	12	63	28	150
2-Propanol	4.8	19	12	46
Carbon Disulfide	4.8	Not Detected	15	Not Detected
3-Chloropropene	4.8	Not Detected	15	Not Detected
Methylene Chloride	12	1.3 J	42	4.6 J
Methyl tert-butyl ether	4.8	Not Detected	17	Not Detected
rans-1,2-Dichloroethene	1,2	Not Detected	4.8	Not Detected
-lexane	1.2	Not Detected	4.2	Not Detected
1,1-Dichloroethane	1.2	Not Detected	4.8	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.8	7.1	14	21
cis-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Tetrahydrofuran	1.2	Not Detected	3.5	Not Detected
Chloroform	1.2	Not Detected	5.8	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.5	Not Detected
Cyclohexane	1.2	0.19 J	4.1	0.64 J
Carbon Tetrachloride	1.2	Not Detected	7.6	Not Detected
2,2,4-Trimethylpentane	1.2	0.24 J	5.6	1:1 J
Benzene	1.2	1:1 J	3.8	3.5 J
1,2-Dichloroethane	1.2	Not Detected	4.8	Not Detected
-leptane	1.2	0.61 J	4.9	2.5 J
Frichloroethene	1.2	Not Detected	6.4	Not Detected
I,2-Dichloropropane	1.2	Not Detected	5.5	Not Detected
1,4-Dioxane	4.8	Not Detected	17	Not Detected
Bromodichloromethane	1.2	Not Detected	8.0	Not Detected
sis-1,3-Dichloropropene	1.2	Not Detected	5.4	Net Detected
I-Methyl-2-pentanone	1.2	0.59 J	4.9	Not Delected
Foluene	1.2	3.4	4.5 /	
rans-1,3-Dichloropropene	1.2	Not Detected		. 13
1,1,2-Trichloroethane	1.2	Not Detected	5.4 6.5	Not Compared
Fetrachloroethene		The state of the s	1_7/	Not Certocted
	1.2	Not Detected	8.1	c / IMM Despend
2-Hexanone	4.8	0.82 J	20	3.4 J
	Do	ge 1		Meaning



Client Sample ID: B18SS-3 Lab ID#: 1607235E-10A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name: Dil. Factor:	p071922 2.40	Date of Collection: 7/11/16 6:49:00 Date of Analysis: 7/19/16 11:36 PM		
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1,2	Not Detected	10	Not Detected
1,2-Dibromoethane (EDB)	1,2	Not Detected	9.2	Not Detected
Chlorobenzene	1.2	Not Detected	5.5	Not Detected
Ethyl Benzene	1.2	Not Detected	5.2	Not Detected
m,p-Xylene	1.2	0.82 J	5.2	3.5 J
o-Xylene	1,2	Not Detected	5.2	Not Detected
Styrene	1.2	Not Detected	5.1	Not Detected
Bromoform	1.2	Not Detected	12	Not Detected
Cumene	1,2	Not Detected	5.9	Not Detected
1,1,2,2-Tetrachloroethane	1.2	Not Detected	8.2	Not Detected
Propylbenzene	1.2	Not Detected	5.9	Not Detected
4-Ethyltoluene	1.2	Not Detected	5.9	Not Detected
1,3,5-Trimethylbenzene	1,2	Not Detected	5.9	Not Detected
1,2,4-Trimethylbenzene	1.2	Not Detected	5.9	Not Detected
1,3-Dichlorobenzene	1.2	Not Detected	7.2	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.2	Not Detected
alpha-Chlorotoluene	1.2	Not Detected	6.2	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.2	Not Detected
1,2,4-Trichlorobenzene	4.8	Not Detected	36	Not Detected
Hexachlorobutadiene	4.8	Not Detected	51	Not Detected
Naphthalene	2.4	Not Detected	12	Not Detected

J = Estimated value:

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	106	70-130
4-Bromofluorobenzene	92	70-130





Client Sample ID: B18SS-4 Lab ID#: 1607235E-11A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name: Dil. Factor:	p071923 2.47		of Collection: 7/1 of Analysis: 7/20	
***	Rpt. Limit	Amount	Rpt. Limit	Amount
Compound	(ppbv)	(ppbv)	(ug/m3)	(ug/m3)
Freon 12	1.2	0.54 J	6.1	2.6 J
Freon 114	1.2	Not Detected	8.6	Not Detected
Chloromethane	12	Not Detected	26	Not Detected
Vinyl Chloride	1,2	Not Detected	3.2	Not Detected
1,3-Butadiene	1.2	Not Detected	2.7	Not Detected
Bromomethane	12	Not Detected	48	Not Detected
Chloroethane	4.9	Not Detected	13	Not Detected
Freon 11	1.2	0.51 J	6.9	2.8 J
Ethanol	4.9	33 7	9.3	62
Freon 113	1.2	Not Detected	9.5	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.9	Not Detected
Acetone	12	Not Detected 23	4.9 29	Not Detected 55
2-Propanol	4.9	55	12	130
z-rropanoi Carbon Disulfide	4.9	2.4 J		
3-Chloropropene	4.9	Not Detected	15 15	7.5 J
				Not Detected
Methylene Chloride	12	Not Detected	43	Not Detected
Methyl tert-butyl ether	4.9	Not Detected	18	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.9	Not Detected
Hexane	1.2	Not Detected	4.4	Not Detected
1,1-Dichloroethane	1.2	Not Detected	5.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.9	3.9 J	14	11 J
cis-1,2-Dichloroethene	1.2	Not Detected	4.9	Not Detected
Tetrahydrofuran	1.2	Not Detected	3.6	Not Detected
Chloroform	1.2	Not Detected	6.0	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.7	Not Detected
Cyclohexane	1.2	Not Detected	4.2	Not Detected
Carbon Tetrachloride	1.2	Not Detected	7.8	Not Detected
2,2,4-Trimethylpentane	1.2	0.23 J	5.8	1.0 J
Benzene	1.2	0.40 J	3.9	1.3 J
1,2-Dichloroethane	1.2	Not Detected	5.0	Not Detected
Heptane	1.2	0.58 J	5.1	2.4 J
Trichloroethene	1.2	Not Detected	6.6	Not Detected
1,2-Dichloropropane	1.2	Not Detected	5.7	Not Detected
1,4-Dioxane	4.9	Not Detected	18	Not Detected
Bromodichloromethane	1.2	Not Detected	8.3	Not Detected
sis-1,3-Dichloropropene	1.2	Not Detected	5,6	Not Detected
I-Methyl-2-pentanone	1.2	0.72 J	5.0	OF MICHIGA
loluene	1.2	7.1	4.6	27
rans-1,3-Dichloropropene	1.2	Not Detected	5.6	ST Not Released
1,1,2-Trichloroethane	1.2	Not Detected		Not Detected
Tetrachloroethene	1.2	Not Detected	8.4	Note Detected
2-Hexanone	4.9	Not Detected		Not Detected
				Not Detected



Client Sample ID: B18SS-4 Lab ID#: 1607235E-11A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name: Dil. Factor:	p071923 2.47	Date of Collection: 7/12/16 6:50:0 Date of Analysis: 7/20/16 12:03 A		
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1,2	Not Detected	10	Not Detected
1,2-Dibromoethane (EDB)	1,2	Not Detected	9.5	Not Detected
Chlorobenzene	1.2	Not Detected	5.7	Not Detected
Ethyl Benzene	1.2	Not Detected	5.4	Not Detected
m,p-Xylene	1,2	0.39 J	5.4	1.7 J
o-Xylene	1,2	Not Detected	5.4	Not Detected
Styrene	1.2	0,29 J	5.3	1.2 J
Bromoform	1.2	Not Detected	13	Not Detected
Cumene	1,2	Not Detected	6.1	Not Detected
1,1,2,2-Tetrachloroethane	1,2	Not Detected	8.5	Not Detected
Propylbenzene	1,2	Not Detected	6.1	Not Detected
4-Ethyltoluene	1.2	Not Detected	6.1	Not Detected
1,3,5-Trimethylbenzene	1.2	Not Detected	6.1	Not Detected
1,2,4-Trimethylbenzene	1.2	Not Detected	6.1	Not Detected
1,3-Dichlorobenzene	1,2	Not Detected	7.4	Not Detected
1,4-Dichlorobenzene	1.2	Not Detected	7.4	Not Detected
alpha-Chlorotoluene	1.2	Not Detected	6.4	Not Detected
1,2-Dichlorobenzene	1.2	Not Detected	7.4	Not Detected
1,2,4-Trichlorobenzene	4.9	Not Detected	37	Not Detected
Hexachlorobutadiene	4.9	Not Detected	53	Not Detected
Naphthalene	2.5	0.76 J	13	4.0 J

J = Estimated value,

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	106	70-130
1,2-Dichloroethane-d4	108	70-130
4-Bromofluorobenzene	91	70-130





Client Sample ID: B18SS-5 Lab ID#: 1607235E-12A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name: Dil. Factor:	p071924 2.34		of Collection: 7/20 of Analysis: 7/20	
	Rpt. Limit	Amount		
Compound	(ppbv)	(ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12 Freon 114	1.2	0.51 J	5.8	2.5 J
Chloromethane	1,2	Not Detected	8.2	Not Detected
	12	Not Detected	24	Not Detected
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,3-Butadiene	1.2	Not Detected	2.6	Not Detected
Bromomethane	12	Not Detected	45	Not Detected
Chloroethane	4.7	Not Detected	12	Not Detected
Freon 11	1,2	0.45 J	6.6	2,5 J
Ethanol	4.7	11 7	8.8	20
Freon 113	1,2	Not Detected	9.0	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Acetone	12	11 J	28	27 J
2-Propanol	4.7	2.5 J	12	6.2 J
Carbon Disulfide	4.7	1.5 J	14	4.8 J
3-Chloropropene	4.7	Not Detected	15	Not Detected
Methylene Chloride	12	Not Detected	41	Not Detected
Methyl tert-butyl ether	4.7	Not Detected	17	Not Detected
rans-1,2-Dichloroethene	1.2	Not Detected	4.6	Not Detected
Hexane	1,2	Not Detected	4.1	Not Detected
1,1-Dichloroethane	1,2	Not Detected	4.7	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.7	3.3 J	14	9.6 J
ss-1,2-Dichloroethene	1,2	Not Detected	4.6	Not Detected
Tetrahydrofuran	1.2	Not Detected	3.4	Not Detected
Chloroform	1.2	0.80 J	5.7	3.9 J
1,1,1-Trichloroethane	1.2	Not Detected	6.4	Not Detected
Cyclohexane	1.2	Not Detected	4.0	Not Detected
Carbon Tetrachloride	1.2	Not Detected	7.4	Not Detected
2,2,4-Trimethylpentane	1.2	0.22 J	5.5	1.0 J
Benzene	1,2	Not Detected	3.7	Not Detected
1,2-Dichloroethane	1.2	Not Detected	4.7	Not Detected
	1.2	Not Detected	4.8	Not Detected
Frichtoroethene	1.2	Not Detected	6.3	Not Detected
1,2-Dichloropropane	1.2	Not Detected	5.4	Not Detected
I,4-Dioxane	4.7	Not Detected	17	Not Detected
Bromodichloromethane	1.2	Not Detected	7.8	Not Detected
sis-1,3-Dichloropropene	1.2	Not Detected	5.3	
I-Methyl-2-pentanone	1.2			- NORTH
Foluene	1.2	Not Detected	4.8	OS THE BOLETE
		0.52 J	4.4	2.0 J
rans-1,3-Dichloropropene	1.2	Not Detected	5.3	I Net Befante
I,1,2-Trichloroethane	1.2	Not Detected	6.4	Ndtribbected
Tetrachloroethene	1.2	1.1 J	7.9	7.888
2-Hexanone	4.7	Not Detected	19	Not Detected



Client Sample ID: B18SS-5 Lab ID#: 1607235E-12A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name: Dil. Factor:	5011024		Date of Collection: 7/12/16 6:01:00 PM Date of Analysis: 7/20/16 12:30 AM		
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)	
Dibromochloromethane	1,2	Not Detected	10	Not Detected	
1,2-Dibromoethane (EDB)	1.2	Not Detected	9.0	Not Detected	
Chlorobenzene	1,2	Not Detected	5.4	Not Detected	
Ethyl Benzene	1,2	Not Detected	5,1	Not Detected	
m,p-Xylene	1,2	Not Detected	5.1	Not Detected	
o-Xylene	1,2	Not Detected	5,1	Not Detected	
Styrene	1.2	Not Detected	5.0	Not Detected	
Bromoform	1,2	Not Detected	12	Not Detected	
Cumene	1,2	Not Detected	5,8	Not Detected	
1,1,2,2-Tetrachloroethane	1,2	Not Detected	8.0	Not Detected	
Propylbenzene	1,2	Not Detected	5,8	Not Detected	
4-Ethyltoluene	1,2	Not Detected	5.8	Not Detected	
1,3,5-Trimethylbenzene	1.2	Not Detected	5.8	Not Detected	
1,2,4-Trimethylbenzene	1,2	Not Detected	5.8	Not Detected	
1,3-Dichlorobenzene	1.2	Not Detected	7.0	Not Detected	
1,4-Dichlorobenzene	1.2	Not Detected	7.0	Not Detected	
alpha-Chlorotoluene	1,2	Not Detected	6.0	Not Detected	
1,2-Dichlorobenzene	1.2	Not Detected	7.0	Not Detected	
1,2,4-Trichlorobenzene	4.7	Not Detected	35	Not Detected	
Hexachtorobutadiene	4.7	Not Detected	50	Not Detected	
Naphthalene	2,3	0.40 J	12	2.1 J	

J = Estimated value.

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	110	70-130
4-Bromofluorobenzene	93	70-130





Client Sample ID: B18SS-1D Lab ID#: 1607235E-13A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name: Dil. Factor:	p071925 2.38		of Collection: 7/1 of Analysis: 7/20	
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1,2	1,0 J	5.9	5.1 J
Freon 114	1,2	Not Detected	8.3	Not Detected
Chloromethane	12	Not Detected	24	Not Detected
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,3-Butadiene	1,2	Not Detected	2.6	Not Detected
Bromomethane	12	Not Detected	46	Not Detected
Chloroethane	4.8	Not Detected	12	Not Detected
Freon 11	1,2	1.2 J	6.7	6.6 J
Ethanol	4.8	19 J	9.0	36
Freon 113	1,2	Not Detected	9.1	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.7	Not Detected
Acetone	12	22	28	53
2-Propanol	4,8	45	12	110
Carbon Disulfide	4.8	Not Detected	15	Not Detected
3-Chloropropene	4.8	Not Detected	15	Not Detected
Methylene Chloride	12	1.6 J	41	5.7 J
Methyl tert-butyl ether	4.8	Not Detected	17	Not Detected
rans-1,2-Dichloroethene	1.2	Not Detected	4.7	Not Detected
Hexane	1.2	Not Detected	4.2	Not Detected
I,1-Dichloroethane	1,2	Not Detected	4.8	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.8	3.9 J	14	12 J
sis-1,2-Dichloroethene	1,2	Not Detected	4.7	Not Detected
Tetrahydrofuran Tetrahydrofuran Tetrahydrofuran Tetrahydrofuran Tetrahydrofuran Tetrahydrofuran Tetrahydrofur	1,2	Not Detected	3.5	Not Detected
Chloroform	1,2	Not Detected	5.8	Not Detected
1,1,1-Trichloroethane	1.2	Not Detected	6.5	Not Detected
Cyclohexane	1.2	0,27 J	4.1	0.93 J
Carbon Tetrachloride	1.2	Not Detected	7.5	Not Detected
2,2,4-Trimethylpentane	1.2	0.23 J	5.6	1.1 J
Benzene	1,2	0.26 J	3.8	0.82 J
,2-Dichloroethane	1,2	Not Detected	4.8	Not Detected
leptane	1,2	0.84 J	4.9	3,4 J
Frichloroethene	1,2	Not Detected	6.4	Not Detected
,2-Dichloropropane	1.2	Not Detected	5.5	Not Detected
I,4-Dioxane	4.8	Not Detected	17	Not Detected
Bromodichloromethane	1.2	Not Detected	8.0	Not Detected
ss-1,3-Dichloropropene	1.2	Not Detected	5.4	Participation
I-Methyl-2-pentanone	1.2	Not Detected	4.9	Not Detect
Foluene	1,2	6.3	4.5	Page Intente
rans-1,3-Dichloropropene	1.2	Not Detected	5.4	Not Detecte
1,1,2-Trichloroethane	1.2	Not Detected	6.5	Not Detected
Tetrachloroethene	1.2	Not Detected	8.1	Not Detected
!-Hexanone	4.8	Not Detected	19	Not Detector
	Pa	ge 1		0117 -60



Client Sample ID: B18SS-1D Lab ID#: 1607235E-13A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name: Dil. Factor:	p071925 2.38	Date of Collection: 7/11/16 5:59:00 PM Date of Analysis: 7/20/16 12:57 AM				
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt Limit (ug/m3)	Amount (ug/m3)		
Dibromochloromethane	1.2	Not Detected	10	Not Detected		
1,2-Dibromoethane (EDB)	1.2	Not Detected	9.1	Not Detected		
Chlorobenzene	1.2	Not Detected	5.5	Not Detected		
Ethyl Benzene	1.2	Not Detected	5.2	Not Detected		
m,p-Xylene	1.2	0.40 J	5.2	1.7 J		
o-Xylene	1.2	Not Detected	5.2	Not Detected		
Styrene	1.2	0.26 J	5.1	1.1 J		
Bromoform	1.2	Not Detected	12	Not Detected		
Cumene	1.2	Not Detected	5.8	Not Detected		
1,1,2,2-Tetrachloroethane	1.2	Not Detected	8.2	Not Detected		
Propylbenzene	1.2	Not Detected	5.8	Not Detected		
4-Ethyltoluene	1.2	Not Detected	5.8	Not Detected		
1,3,5-Trimethylbenzene	1.2	Not Detected	5.8	Not Detected		
1,2,4-Trimethylbenzene	1.2	Not Detected	5.8	Not Detected		
1,3-Dichlorobenzene	1.2	Not Detected	7.2	Not Detected		
1,4-Dichlorobenzene	1.2	Not Detected	7.2	Not Detected		
alpha-Chlorotoluene	1.2	Not Detected	6.2	Not Detected		
1,2-Dichlorobenzene	1.2	Not Detected	7.2	Not Detected		
1,2,4-Trichlorobenzene	4.8	Not Detected	35	Not Detected		
Hexachlorobutadiene	4.8	Not Detected	51	Not Detected		
Naphthalene	2.4	0.11 J	12	0.58 J		

J = Estimated value.

Container Type: 1 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	105	70-130
4-Bromofluorobenzene	92	70-130





Client Sample ID: B18AA-071216 Lab ID#: 1607235D-14A

File Name: Dil. Factor:	20071915 1.59		of Collection: 7/1 of Analysis: 7/19	
	Rpt. Limit	Amount	Rpt Limit	Amount
Compound	(ppbv)	(ppbv)	(ug/m3)	(ug/m3)
Freon 12	0.16	0,62	0.79	3.0
Freon 114	0.16	Not Detected	1,1	Not Detected
Chloromethane	0.80	1.1	1.6	2.2
Vinyl Chloride	0.16	Not Detected	0.41	Not Detected
1,3-Butadiene	0.16	Not Detected	0.35	Not Detected
Bromomethane	0.80	Not Detected	3.1	Not Detected
Chloroethane	0.80	Not Detected	2.1	Not Detected
Freon 11	0.16	0.37	0.89	2.1
Ethanol	0.80	5.6	1.5	10
Freon 113	0.16	0.13 J	1.2	1.0 J
1,1-Dichloroethene	0.16	Not Detected	0.63	Not Detected
Acetone	0.80	37	1.9	87
2-Propanol	0.80	2,5	2.0	6.2
Carbon Disulfide	0.80	Not Detected	2.5	Not Detected
3-Chloropropene	0.80	Not Detected	2.5	Not Detected
Methylene Chloride	0.32	0.26 J	1.1	0.89 J
Methyl tert-butyl ether	0.16	Not Detected	0.57	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.63	Not Detected
Hexane	0.16	0,054 J	0.56	0.19 J
1,1-Dichloroethane	0.16	Not Detected	0.64	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.80	1.8	2.3	5.2
cis-1,2-Dichloroethene	0.16	Not Detected	0.63	Not Detected
Tetrahydrofuran	0.80	Not Detected	2.3	Not Detected
Chloroform	0.16	Not Detected	0.78	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.87	Not Detected
Cyclohexane	0.16	Not Detected	0.55	Not Detected
Carbon Tetrachloride	0.16	0.070 J	1.0	0.44 J
2,2,4-Trimethylpentane	0.80	Not Detected	3.7	Not Detected
Benzene	0.16	0.10 J	0.51	0.32 J
1,2-Dichloroethane	0.16	Not Detected	0.64	Not Detected
Heptane	0.16	0.076 J	0.65	0.31 J
Trichloroethene	0.16	Not Detected	0.85	Not Detected
1,2-Dichloropropane	0.16	Not Detected	0.73	Not Detected
1,4-Dioxane	0.16	0.83	0.57	3.0
Bromodichloromethane	0.16	Not Detected	1.1	Not Detected
cis-1,3-Dichloropropene	0.16	Not Detected	0.72	MOCHOGO
4-Methyl-2-pentanone	0.16	Not Detected	0.65	Not Detected
Toluene	0.16	0.38	0.60	1.4
trans-1,3-Dichloropropene	0.16	Not Detected	0.72	No Detected
1,1,2-Trichloroethane	0.16	Not Detected	0.72	Not Delected
Tetrachloroethene	0.16	Not Detected	1.1	
2-Hexanone	0.80	Not Detected	3.2	Not Detector



Client Sample ID: B18AA-071216 Lab ID#: 1607235D-14A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name: Dil. Factor:	20071915 1.59	Date of Collection: 7/12/16 2:08:00 P Date of Analysis: 7/19/16 06:00 PM				
Compound	Rpt. Limit (ppbv)		Rpt. Limit (ug/m3)	Amount (ug/m3)		
Dibromochloromethane	0.16	Not Detected	1.4	Not Detected		
1,2-Dibromoethane (EDB)	0.16	Not Detected	1.2	Not Detected		
Chlorobenzene	0.16	Not Detected	0.73	Not Detected		
Ethyl Benzene	0.16	Not Detected	0.69	Not Detected		
m,p-Xylene	0.16	0.039 J	0.69	0.17 J		
o-Xylene	0.16	Not Detected	0.69	Not Detected		
Styrene	0.16	0.016 J	0.68	0.070 J		
Bromoform	0.16	Not Detected	1.6	Not Detected		
Cumene	0.16	Not Detected	0.78	Not Detected		
1,1,2,2-Tetrachloroethane	0.16	Not Detected	1.1	Not Detected		
Propylbenzene	0,16	Not Detected	0.78	Not Detected		
4-Ethyltoluene	0.16	Not Detected	0.78	Not Detected		
1,3,5-Trimethylbenzene	0.16	Not Detected	0.78	Not Detected		
1,2,4-Trimethylbenzene	0.16	Not Detected	0.78	Not Detected		
1,3-Dichlorobenzene	0.16	Not Detected	0.96	Not Detected		
1,4-Dichlorobenzene	0.16	Not Detected	0.96	Not Detected		
alpha-Chlorotoluene	0.16	Not Detected ()	0.82	Not Detected		
1,2-Dichlorobenzene	0.16	Not Detected	0.96	Not Detected		
1,2,4-Trichlorobenzene	0.80	Not Detected	5.9	Not Detected		
Hexachlorobutadiene	0.80	Not Detected	8.5	Not Detected		
Naphthalene	0.80	0.023 J	4.2	0.12 J		

J = Estimated value.

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	124	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	96	70-130





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Page 1 of 2

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DYA B181A-47010816	13087	7/9/		1835	TO-15		-30"+			
SA B18[A-5 FOTO 818) 1	31146	7/9		1844	TO-15			-6.5		
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Page 2 of 2

Project Man	lager Terry Taylor			Drois	ct Info:		Turn	Around	Lab Use	Only	
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Client Sample ID: B18IA-I Lab ID#: 1607235F-01A

EPA METHOD TO-15 GC/MS

File Name: Dil. Factor:	14071924 1.65		Date of Collection: 7/9/16 7:02:00 PM Date of Analysis: 7/19/16 05:48 PM				
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)			
Methanol	160	Not Detected	220	Not Detected			
Container Type: 6 Liter Summ	a Canister (100% Certifie	d)					
Surrogates		%Recovery		Method Limits			
1,2-Dichloroethane-d4		101		70-130			
Toluene-d8		100		70-130			
4-Bromofluorobenzene		98		70-130			





Client Sample ID: B18IA-2 Lab ID#: 1607235F-02A

EPA METHOD TO-15 GC/MS

File Name: Dil. Factor:	14071925 1.71		Date of Collection: 7/9/16 6:49:00 PM Date of Analysis: 7/19/16 06:33 PM			
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt, Limit (ug/m3)	Amount (ug/m3)		
Methanol	170	Not Detected	220	Not Detected		
Container Type: 6 Liter Summ	na Canister (100% Certifie	d)				
Surrogates		%Recovery		Method Limits		
1,2-Dichloroethane-d4		99		70-130		
Toluene-d8		103	•	70-130		
4-Bromofluorobenzene		99		70-130		





Client Sample ID: B18IA-3 Lab ID#: 1607235F-03A

EPA METHOD TO-15 GC/MS

File Name: Dil. Factor:	14071926 1.61		of Collection: 7/9 of Analysis: 7/19	
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methanol	160	Not Detected	210	Not Detected
Container Type: 6 Liter Sumn	na Canister (100% Certifie	d)		
Surrogates		%Recovery		Method Limits
1,2-Dichloroethane-d4		104		70-130
Toluene-d8		102		70-130
4-Bromofluorobenzene		100		70-130





Client Sample ID: B18IA-4 Lab ID#: 1607235F-04A

File Name: Dil. Factor:	14071927 1.60		of Collection: 7/9 of Analysis: 7/19	
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methanol	160	Not Detected	210	Not Detected
Container Type: 6 Liter Summ	a Canister (100% Certifie	ed)		
Surrogates		%Recovery		Method Limits
1,2-Dichloroethane-d4	•	100	<u> </u>	70-130
Toluene-d8		102		70-130
4-Bromofluorobenzene		99		70-130





Client Sample ID: B18IA-5 Lab ID#: 1607235F-05A

File Name: Dil. Factor:	14071928 1.67	Date of Collection: 7/9/16 6:44:00 PM Date of Analysis: 7/19/16 08:01 PM		
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methanol	170	Not Detected	220	Not Detected
Container Type: 6 Liter Summ	a Canister (100% Certifie	d)		
Surrogates		%Recovery		Method Limits
1,2-Dichloroethane-d4		98		70-130
Toluene-d8		101		70-130
4-Bromofluorobenzene		98		70-130





Client Sample ID: B18IA-1D Lab ID#: 1607235F-06A

File Name: Dil. Factor:	14071929 1.66		of Collection: 7/9 of Analysis: 7/19/	
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methanol	170	Not Detected	220	Not Detected
Container Type: 6 Liter Sumi	na Canister (100% Certifie	d)		
C				Method
Surrogates		%Recovery		Limits
1,2-Dichloroethane-d4		99		70-130
1,2-Dichloroethane-d4 Toluene-d8		99 102		70-130 70-130





Client Sample ID: B18SS-1 Lab ID#: 1607235F-08A

File Name: Dil. Factor:	14071916 2.40		te of Collection: 7/11 te of Analysis: 7/19/1	
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methanol	240	240	310	320
Container Type: 1 Liter Sumn	a Canister (100% Certified	1)		
Surrogates		%Recovery		Method Limits
1,2-Dichloroethane-d4		101		70-130
Toluene-d8		102		70-130
4-Bromofluorobenzene		99		70-130





Client Sample ID: B18SS-2 Lab ID#: 1607235F-09A

File Name: Dil. Factor:	14071917 2.38		Date of Collection: 7/12/16 7:37:00 PM Date of Analysis: 7/19/16 03:13 PM	
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Methanol	240	Not Detected	310	Not Detected
Container Type: 1 Liter Summ	a Canister (100% Certifie	d)		
	a Canister (100% Certifie	d) %Recovery		Method Limits
Surrogates	a Canister (100% Certifie	•		
Container Type: 1 Liter Summ Surrogates 1,2-Dichloroethane-d4 Toluene-d8	a Canister (100% Certifie	%Recovery		Limits





Client Sample ID: B18SS-3 Lab ID#: 1607235F-10A

File Name: Dil. Factor:	14071918 2.40		e of Collection: 7/11 e of Analysis: 7/19/1	
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt Limit (ug/m3)	Amount (ug/m3)
Methanol	240	310	310	400
Container Type: 1 Liter Summ	na Canister (100% Certified	1)		
Surrogates		%Recovery		Method Limits
1,2-Dichloroethane-d4		100		70-130
Toluene-d8		100		70-130
4-Bromofluorobenzene		98		70-130





Toluene-d8

4-Bromofluorobenzene

Air Toxics

Client Sample ID: B18SS-4 Lab ID#: 1607235F-11A

EPA METHOD TO-15 GC/MS

File Name: Dil. Factor:	14071919 2.48		Date of Collection: 7/12/16 6:50:00 PM Date of Analysis: 7/19/16 03:56 PM		
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)	
Methanol	250	Not Detected	320	Not Detected	
Container Type: 1 Liter Sun	nma Canister (100% Certifie	d)			
Surrogates		%Recovery		Method Limits	
1,2-Dichloroethane-d4		103		70-130	

105

100



70-130



Toluene-d8

4-Bromofluorobenzene

Air Toxics

Client Sample ID: B18SS-5 Lab ID#: 1607235F-12A

EPA METHOD TO-15 GC/MS

File Name: Dil. Factor:	14071921 2.34	Date of Collection: 7/12/16 6:01:00 PM Date of Analysis: 7/19/16 04:31 PM		
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt Limit (ug/m3)	Amount (ug/m3)
Methanol	230	Not Detected	310	Not Detected
Container Type: 1 Liter Su	ımma Canister (100% Certifie	d)		
Surrogates		%Recovery		Method Limits
1,2-Dichloroethane-d4		98		70-130

103

98



70-130



Toluene-d8

4-Bromofluorobenzene

Air Toxics

Client Sample ID: B18SS-1D Lab ID#: 1607235F-13A

EPA METHOD TO-15 GC/MS

File Name: Dil. Factor:			Date of Collection: 7/11/16 5:59:00 PM Date of Analysis: 7/19/16 05:04 PM	
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt Limit (ug/m3)	Amount (ug/m3)
Methanol	240	Not Detected	310	Not Detected
Container Type: 1 Liter Sum	ma Canister (100% Certifie	d)		
Surrogates		%Recovery		Method Limits
1,2-Dichloroethane-d4		101		70-130

103

97



70-130



Client Sample ID: B18AA-071216 Lab ID#: 1607235F-14A

File Name: Dil. Factor:	14071923 1.59		Date of Collection: 7/12/16 2:08:00 PM Date of Analysis: 7/19/16 05:28 PM		
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)	
Methanoi	160	Not Detected	210	Not Detected	
Container Type: 6 Liter Summ	a Canister (100% Certifie	d)		Method	
Surrogates		%Recovery		Limits	
1,2-Dichloroethane-d4		97		70-130	
Toluene-d8		104		70-130	
4-Bromofluorobenzene		98		70-130	





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collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922 Page 1 of 2 Project Manager Terry Laylor Project Info: Turn Around Lab Use Only Collected by: (Print and Sign) R. U Kelly Time: Pressurized by: P.O. # M Normal Company AMA Date: Address 2000 Westbacks Ave City Rush State NVZio 1067 Project # Pressurization Gas: * 914 -151-0400 ,309 Fax 914-251-1286 **Project Name** specify N_2 He Date Canister Pressure/Vacuum Time Leb I.D. Field Sample I.D. (Location) Can # of Collection of Collection **Analyses Requested** Initial Final Receipt Final B18 ta -1 3353 7/9/16 TO-15 1902 660015 7/9/16 10.15 03/ TO-15 7/9/14 041 TO-15 TO-15 6 h 1900 TO-15 1011 07081 TO-15 1071016 TO-15 300 B1855-1 TO-15 Relinquished by (slanature) , Date/Time Received by: (signature) Date/Time * Sumple 1330IA-1 (070816) Relinquished by: (signature) Received by: (signature) Date/Time a 14-hour TATIS requested, 10:20 all other samples are a normal Relinquished by: (signature) Date/Time Received by: (signature) TAT. Report Results to MIDL Shipper Name Air Bill # Temp (°C) Lab Condition **Custody Seals Intact?** Work Order # Use 900 A Yes None 1607235 No Only



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Page 2 of 2 Terry Taylor Project Manager _ Project Info: Lab Use Only **Turn Around** Time: Pressurized by: Normal Company AMA Date: O Rush Pressurization Gas: Phone 914-351 - 0400 x 309 Fax 914-251-1586 Project Name N₂ specify He Date Time Canister Pressure/Vacuum Field Sample I.D. (Location) Lab I.D. Can # of Collection of Collection **Analyses Requested** Initial Final Receipt Final [0] 7031 7/16/16 MA 10-15 1850 12/ TO-13 30 + TO-K WA -30ª Relinquished by: (signature) Received by: (siggature) Date/Time Notes: 7-13-16 770 Relinquishedby: (signature) Date/Time Received by: (signature) Date/Time 10:20 Relinquished by: (signature) Date/Time Received by: (signature) Shipper Name Lab Air Bill # Temp (°C) Condition Custody Seals Intact? Work Order # Use Only Yes No None



Client Sample ID: B18IA-1 Lab ID#: 1607235G-01A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10071906	Date of Collect	ction: 7/9/16 7:02:00 PM
Dil. Factor:	1.65	Date of Analysis: 7/19/16 11:07 AM	
		Rpt. Limit	Amount
Compound		(%)	(%)
Methane		0,00016	0.00016





Client Sample ID: B18IA-2 Lab ID#: 1607235G-02A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name: Dil. Factor:	10071907 1.71		ction: 7/9/16 6:49:00 PM sis: 7/19/16 11:39 AM
Compound		Rpt. Limit (%)	Amount (%)
Methane	•	0.00017	0.00018





Client Sample ID: B18IA-3 Lab ID#: 1607235G-03A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name: Dil. Factor:	10071908 1.61		ction: 7/9/16 6:27:00 PM sis: 7/19/16 12:07 PM
Compound		Rpt. Limit (%)	Amount (%)
Methane	-	0.00016	0.00018





Client Sample ID: B18IA-4 Lab ID#: 1607235G-04A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

j			
File Name:	10071909	Date of Collec	ction: 7/9/16 6:35:00 PM
Dil. Factor:	1.60	Date of Analy	sis: 7/19/16 12:35 PM
		Rpt. Limit	Amount
Compound		(%)	(%)
Methane		0.00016	0.00020





Client Sample ID: B18IA-5 Lab ID#: 1607235G-05A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10071910	Date of Collection	ction: 7/9/16 6:44:00 PM
Dil. Factor:	1.67	Date of Analysis: 7/19/16 12:59 P	
		Rpt. Limit	Amount
Compound		(%)	(%)
Methane	-	0.00017	0.00019





Client Sample ID: B18IA-1D Lab ID#: 1607235G-06A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10071911	Date of Collection: 7/9/16 7:02:00 PM		
Dil. Factor:	1.66	Date of Analysis: 7/19/16 02:21 PM		
		Rpt. Limit	Amount	
Compound		(%)	(%)	
Methane		0.00017	0.00020	





Client Sample ID: B18SS-1 Lab ID#: 1607235G-08A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10071912	Date of Colle	ction: 7/11/16 6:00:00 PM	
Dil. Factor:	2.40	Date of Analysis: 7/19/16 03:01 P		
		Rpt. Limit	Amount	
Compound		(%)	(%)	
Methane		0.00024	0.000096 J	

J = Estimated value.





Client Sample ID: B18SS-2 Lab ID#: 1607235G-09A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10071913	Date of Colle	ction: 7/12/16 7:37:00 PM
Dil. Factor:	2.38	Date of Analy	/sis: 7/19/16 03:27 PM
		Rpt. Limit	Amount
Compound		(%)	(%)
Methane		0.00024	0.00020.1

J = Estimated value.





Client Sample ID: B18SS-3 Lab ID#: 1607235G-10A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10071914	Date of Collect	ction: 7/11/16 6:49:00 PM
Dil. Factor:	2.40	Date of Analy	sis: 7/19/16 03:53 PM
		Rpt. Limit	Amount
Compound		(%)	(%)
Methane		0.00024	0.00016 J

J = Estimated value.





Client Sample ID: B18SS-4 Lab ID#: 1607235G-11A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name: Dil. Factor:	10071915 2.48		ction: 7/12/16 6:50:00 PM sis: 7/19/16 04:21 PM
Compound		Rpt. Limit (%)	Amount (%)
Methane		0.00025	0.00016 J

J = Estimated value.





Client Sample ID: B18SS-5 Lab ID#: 1607235G-12A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name: Dil. Factor:	10071916 2.34	Date of Collection: 7/12/16 Date of Analysis: 7/19/16 04		
		Rpt. Limit	Amount	
Compound Methane		0 00023	(%) 0.00010.1	

J = Estimated value.





Client Sample ID: B18SS-1D Lab ID#: 1607235G-13A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10071917	Date of Collection: 7/11/16 5:59:00 PM	
Dil. Factor:	2.38	Date of Analy	sis: 7/19/16 05:17 PM
		Rpt. Limit	Amount
Compound		(%)	(%)
Methane		0.00024	0.00016 J

J = Estimated value.





Client Sample ID: B18AA-071216 Lab ID#: 1607235G-14A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	10071918	Date of Collection: 7/12/16 2:08			
Dil. Factor:	1.59	1.59 Date of Analysis: 7/19/16 05:40 PM			
		Rpt. Limit	Amount		
Compound		(%)	(%)		
Methane	****	0.00016	0.00018		



neurofins eurofins

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Page 1 of 2

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୭୪୬	B1855-1 (071016)	36376	7/10/16	1300	TO-13		18"	-5"		
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Page 2 of 2

Project Mar	nager Terry TAYlor			-	(0.07)	77 7002					an Tex	01 -7
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Naphthalene-d8

Air Toxics

Client Sample ID: B18IA-1 Lab ID#: 1607228B-01A EPA METHOD TO-17

File Name: Dif. Factor:	6072011 Date of Extraction: NADate of Collection: 7/9/16 9:57:00 AM 1.00 Date of Analysis: 7/20/16 07:17 PM				
Compound	Rpt. Limit (ppbv)	Rpt. Limit (ug/m3)	Amount (ppbv)	Amount (ug/m3)	
Naphthalene	0.017	0,090	0.031	0.16	
Air Sample Volume(L): 11.1 Container Type: TO-17 VI Tube					
Surrogates		%Recovery		Method Limits	

105





Client Sample ID: B18IA-2 Lab ID#: 1607228B-02A

EPA METHOD TO-17

File Name: Dll. Factor:	6072012 Date of Extraction: NADate of Collection: 7/9/16 6:52:00 PM 1.00 Date of Analysis: 7/20/16 07:57 PM			
Compound	Rpt. Limit (ppbv)	Rpt. Limit (ug/m3)	Amount (ppbv)	Amount (ug/m3)
Naphthalene	0.011	0.060	0.0088 J	0.046 J
Air Sample Volume(L): 16.8 J = Estimated value. Container Type: TO-17 VI Tube				

Surrogates%RecoveryMethod
LimitsNaphthalene-d810450-150





Client Sample ID: B18IA-3 Lab ID#: 1607228B-03A EPA METHOD TO-17

File Name: Dil. Factor:	6072013 Date of Extraction: NADate of Collection: 7/9/16 6:27:00 PM 1.00 Date of Analysis: 7/20/16 08:37 PM				
Compound	Rpt. Limit (ppbv)	Rpt. Limit (ug/m3)	Amount (ppbv)	Amount (ug/m3)	
Naphthalene	0.011	0,056	0.022	0.11	
Air Sample Volume(L): 17.8 Container Type: TO-17 VI Tube					
Surrogates		%Recovery		Method Limits	
Naphthalene-d8	117 50-150			50-150	





Client Sample ID: B18IA-4 Lab ID#: 1607228B-04A

EPA METHOD TO-17

File Name: Dil. Factor:	6072014 Date of 1.00	f Extraction: NADate Date	of Collection: 7/9/ of Analysis: 7/20/	
Compound	Rpt. Limit (ppbv)	Rpt. Limit (ug/m3)	Amount (ppbv)	Amount (ug/m3)
Naphthalene	0.012	0.062	0.029	0.15
Air Sample Volume(L): 16.1 Container Type: TO-17 VI Tube				
Surrogates		%Recovery		Method Limits
Naphthalene-d8	114 50-150			50-150





Client Sample ID: B18IA-5 Lab ID#: 1607228B-05A EPA METHOD TO-17

File Name: Dil. Factor:	6072015 Date of 1.00	f Extraction: NADate Date	of Collection: 7/9/ of Analysis: 7/20/	
Compound	Rpt. Limit (ppbv)	Rpt. Limit (ug/m3)	Amount (ppbv)	Amount (ug/m3)
Naphthalene	0.012	0.060	0.074	0.39
Air Sample Volume(L): 16.6 Container Type: TO-17 VI Tube				
Surrogates		%Recovery		Method Limits
Naphthalene-d8	108		50-150	





Client Sample ID: B18IA-1D Lab ID#: 1607228B-06A

EPA METHOD TO-17

File Name: Dil. Factor:	6072016 Date of Extraction: NADate of Collection: 7/9/16 10:51:00 AM 1.00 Date of Analysis: 7/20/16 10:36 PM				
Compound	Rpt. Limit (ppbv)	Rpt. Limit (ug/m3)	Amount (ppbv)	Amount (ug/m3)	
Naphthalene	0,017	0.088	Not Detected	Not Detected	
Air Sample Volume(L): 11.4 Container Type: TO-17 VI Tube					
Surrogates		%Recovery		Method Limits	
Naphthalene-d8		116	6	50-150	





Client Sample ID: B18AA-070816 Lab ID#: 1607228B-08A

EPA METHOD TO-17

File Name: Dil. Factor:	6072018 Date o		te of Collection: 7/1 te of Analysis: 7/20/	
Compound	Rpt. Limit (ppbv)	Rpt. Limit (ug/m3)	Amount (ppbv)	Amount (ug/m3)
Naphthalene	0.011	0,060	Not Detected	Not Detected
Air Sample Volume(L): 16.8 Container Type: TO-17 VI Tube				
Surrogates		%Recovery		Method Limits
Naphthalene-d8	111 50-150			50-150





Client Sample ID: B18SS-1 Lab ID#: 1607228B-09A

EPA	ME	THOD	<u>TO-</u> 17	

File Name:	6072019	Date of Extraction: NADa	ate of Collection: 7/1	1/16 5:49:00 PM
Dil. Factor:	1.00	Da	te of Analysis: 7/20/	16 11:55 PM
	Rpt. L	imit Rpt. Limit	Amount	Amount
Compound	(ppb	v) (ug/m3)	(ppbv)	(ug/m3)
Naphthalene	0.47	7 25	0.35.1	1.8.1

Air Sample Volume(L): 0.402

J = Estimated value.

Container Type: TO-17 VI Tube

		Method
Surrogates	%Recovery	Limits
Nanhthalene-d8	116	50-150





Client Sample ID: B18SS-2 Lab ID#: 1607228B-10A __EPA METHOD TO-17

File Name:	6072020	Date of Extraction: NADate of Collection: 7/12/16 7:41:00 PM
Dil. Factor:	1.00	Date of Analysis: 7/21/16 12:35 AM

0	Rpt. Limit	Rpt. Limit	Amount	Amount
Compound	(ppbv)	(ug/m3)	(ppbv)	(ug/m3)
Naphthalene	0.47	2,5	0.33 J	1.7 J

Air Sample Volume(L): 0.402

J = Estimated value.

Container Type: TO-17 VI Tube

0 . 77		Method
Surrogates	%Recovery	Limits
Naphthalene-d8	108	50-150





Naphthalene-d8

Client Sample ID: B18SS-1D Lab ID#: 1607228B-11A

EPA METHOD TO-17

File Name: Dil. Factor:	6072021 Date of Extraction: N/Date of Collection: 7/11/16 5:54:00 1.00 Date of Analysis: 7/21/16 01:15 Al				
Compound	Rpt. Limit (ppbv)	Rpt. Limit (ug/m3)	Amount (ppbv)	Amount (ug/m3)	
Naphthalene	0.47	2.5	0,28 J	1.4 J	
Air Sample Volume(L): 0.402 J = Estimated value,					
Container Type: TO-17 VI Tube					
Surrogates		%Recovery		Method Limits	

114



50-150



Air Toxics

Client Sample ID: B18SS-3 Lab ID#: 1607228B-12A EPA METHOD TO-17

File Name: Dil. Factor:	6072022 Date of	1/16 6:57:00 PN 16 01:54 AM		
Compound	Rpt. Limit (ppbv)	Rpt. Limit (ug/m3)	Amount (ppbv)	Amount (ug/m3)
Naphthalene	0.48	2.5	2,3	12
Air Sample Volume(L): 0.399				
Container Type: TO-17 VI Tube				
				Method
Surrogates		%Recovery		Limits
Naphthalene-d8		117		50-150





Air Toxics

Client Sample ID: B18SS-4 Lab ID#: 1607228B-13A

EPA METH	OD TO-17
----------	----------

File Name: Dil. Factor:	6072023 Date of Extraction: NADate of Collection: 7/12/16 6:55:00 PM 1.00 Date of Analysis: 7/21/16 02:34 AM					
Compound	Rpt. Limit (ppbv)	Rpt. Limit (ug/m3)	Amount (ppbv)	Amount (ug/m3)		
Naphthalene	0.48	2.5	0.72	3.8		
Air Sample Volume(L): 0.399 Container Type: TO-17 VI Tube						
Surrogates		%Recovery		Method Limits		
Naphthalene-d8		107		50-150		





Air Toxics

Client Sample ID: B18SS-5 Lab ID#: 1607228B-14A

EPA METHOD TO-17

File Name: Dil. Factor:	6072024 Date of 1.00	Extraction: NADate Date	of Collection: 7/12 of Analysis: 7/21/	
Compound	Rpt. Limit (ppbv)	Rpt. Limit (ug/m3)	Amount (ppbv)	Amount (ug/m3)
Naphthalene	0.52	2.7	0.50 J	2.6 J

Air Sample Volume(L): 0.369

J = Estimated value.

Container Type: TO-17 VI Tube

Surrogates	%Recovery	Method Limits
Naphthalene-d8	112	50-150





Client Sample ID: Field Blank Lab ID#: 1607228B-15A

EPA METHOD TO-17

Dil. Factor:	1.00	6072010 Date of Extraction: NADate of Collection: 7/12/16 1.00 Date of Analysis: 7/20/16 06					
Compound	Rpt. Limit (ppbv)	Rpt. Limit (ug/m3)	Amount (ppbv)	Amount (ug/m3)			
Naphthalene	0.011	0.056	Not Detected	Not Detected			
Air Sample Volume(L): 17.8 Container Type: TO-17 VI Tube							
Surrogates		%Recovery		Method Limits			
Naphthalene-d8	***	106		50-150			



TO-17 SAMPLE COLLECTION

CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4822.

180 BLUE RAVINE ROAD, SUITE B **FOLSOM, CA 95630**

(916) 985-1000 FAX (916) 985-1020 Page \ of \ Z

Project Ma	nager lerry laylor		· · · · · · · · · · · · · · · · · · ·	Projec	t Info:		1	îurn Arou	rd Ba	porting	П	
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Phone <u>91</u> 4	4-251-0400 x309 Fax 9	14-251-1286			Name			Specify	200.00	ng/m3		충
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044	RIRTA-4	153639 7/9	1/16 1	836	1836	34	33	16,080	४४	78	M	
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V. S.	*B301A-14	137170 7/9	1/16 1	810	1810	36	52	21,120	81	81	M	
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Use Only	Fed 5x		9,8"	2	SDR		Yes No	Vone	at the second	5072	against the con-	Mercont of the right

TO-17 SAMPLE COLLECTION

CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice
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Page 7 of 7

Project Ma	mager Terry Taylor			Projec	t Info:		Es	Turn Arou	ınel İ.	raye_		.01	<u>⊀</u> T⊐
Collected I	Dy: (Print and Sign) RC DL T							Time:	_	Reporting Units:			
Company_	-A -	ail Halerecominición	nulticom	P.O. #_				Normal		ppmv			Ä
	Westchesle-Ave City Richard	State U) Z		Project	# Build.	<u> </u>	VI	Rush		ppbv µg/m3		-	R
	1-231-0400 Fax			Project	Name			specify		mg/m3			딈
Lab I.D.	Field Sample I.D. (Location)	or Stamped Col	iaction i	art Time ar : mia)	End Time (hr:min)	Pre-Te		st Volume	Inde	oor/Outdoor	Indoor Air	Outdoor Air Soil Vapor	Other (Freis Riverk
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Lab	The state of the s	r.811#	Temp (°C	9	Condition		Custody Sea	ls Intact?		Work Ord	der#		
Use Only	Fed Ex		9.800		SOR		Yes No	A TON A BOTH TO A CO. A.	1900	160722	all Services	Decay (C)	
										1010			\dashv

	Project Number:1607235D Date:07/09-12/2016
REVIEW OF VOLATILE ORG The following guidelines for evaluating volatile organics vactions. This document will assist the reviewer in using production and in better serving the needs of the data users. The JSEPA data validation guidance documents in the following Compendium Method TO-15. Determination of Volatile Organization and January By Gas Chanuary, 1999"; USEPA Hazardous Waste Support Brank Analysis of Ambient Air in Canisters by Method TO-15, (SOING Coriteria and data validation actions listed on the data revolution and decoment, unless otherwise noted. The hardcopied (laboratory name) _EurofinsAir_Toxicseviewed and the quality control and performance data summer services.	vere created to delineate required validation refessional judgment to make more informed the sample results were assessed according to wing order of precedence: QC criteria from ganic Compounds (VOCs) In Air Collected Informatography/Mass Spectrometry (GC/MS), ch. Validating Air Samples. Volatile Organic P # HW-31. Revision #4. October, 2006). The iew worksheets are from the primary guidance data package received has been
.ab. Project/SDG No.:1607235D No. of Samples:7	Sample matrix:Air
Frip blank No.:	X Laboratory Control SpikesX Field DuplicatesX CalibrationsX Compound IdentificationsX Compound QuantitationX Quantitation Limits
Definition of Qualifiers: - Estimated results - Compound not detected R- Rejected data - JJ- Estimated nondetect - Reviewer:	

DATA COMPLETENESS

MISSING INFORMATION	DATE LAB. CONTACTED	DATE RECEIVED
4		
		_
		1

All criteria were met _X
Criteria were not met
and/or see below

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE ANALYZED	pН	ACTION
All samples anal	yzed within the recomi	mended method holding	time. Al	Il summa canisters received
in good condition	ns. The Chain of Cus	tody (COC) information	for sam	nple B18AA-071216 did not
			fication.	The information on the COC
was used to prod	ess and report the san	nple.		
-				200

Criteria

Aqueous samples – 14 days from sample collection for preserved samples (pH \leq 2, 4°C), no air bubbles.

Aqueous samples – 7 days from sample collection for unpreserved samples, 4°C, no air bubbles. Soil samples- 7 days from sample collection.

Cooler temperature (Criteria: 4 ± 2 °C): N/A – summa canisters

Actions

If the VOCs vial(s) have air bubbles, estimate positive results (J) and reject nondetects (R). If the % solids of soil samples is 10-50%, estimates positive results (J) and nondetects (UJ) If the % solid of soil samples is < 10%, estimate positive results (J) and reject nondetects (R). If holding times are exceeded but < 14 days beyond criteria, estimate positive results (J) and

If holding times are exceeded but < 14 days beyond criteria, estimate positive results (J) and nondetects (UJ).

If holding times are exceeded but < 28 days beyond criteria, estimate positive results (J) and reject nondetects (R).

If holding times are grossly exceeded (> 28 days beyond criteria), reject all results (R).

If samples were not iced or if the ice were melted (> 10°C), estimate positive results (J) and nondetects (UJ).

All criteria were metX
Criteria were not met see below

GC/MS TUNING

List	the	samples	affected:
f no, use profession qualified or rejected.	nal judgment to deter	rmine whether the associated data	should be accepted,
XBFB tuning v	vas performed for eve	ery 24 hours of sample analysis.	
_X The BFB per	formance results wer	re reviewed and found to be within th	e specified criteria.
The assessment of standard tuning QC I		to determine if the sample instrume	entation is within the

If mass calibration is in error, all associated data are rejected.

All criteria were met _X
Criteria were not met
and/or see below

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:	06/24/2016
Dates of continuing calibration:	07/19/2016
Instrument ID numbers:MS	SD-20
Matrix/Level:	Air/low

DATE	LAB FILE ID#	CRITERIA OUT RFs, %RSD, <u>%D</u> , r	COMPOUND	SAMPLES AFFECTED
Initial and in this doc	continuing calibration ument.	ons meet method spec	ific requirements except i	n the cases described
6/24/16	2016L0624B	32 %	α-chlorotoluene	All samples
7/19/16	1607235D-16A	32 %	4-methyl-2-pentanone	All samples
		34 %	Bromoform	1
		37 %	α-chlorotoluene	- 1

Note: Analytes qualified as estimated (J) or (UJ) in affected samples.

Criteria

All RFs must be > 0.05 regardless of method requirements for SPCC.

All %RSD must be ≤ 15 % regardless of method requirements for CCC.

All %Ds must be \leq 30% regardless of method requirements for CCC.

Method TO-15 does not specify criterion for the curve correlation coefficient (r). A limit for r of \geq 0.995 has therefore been utilized as professional judgment.

Actions

If any compound has an initial RF or a continuing RF of < 0.05, estimate positive results (J) and reject nondetects (R), regardless of method requirements.

If any compound has a $\Re RSD > 15\%$, estimate positive results (J) and use professional judgment to qualify nondetects.

If any compound has a %RSD > 90%, estimate positive results (J) and reject nondetects (R).

If any compound has a % D > 30%, estimate positive results (J) and reject nondetects (R).

If any compound has a % D > 30%, estimate positive results (J) and nondetects (UJ).

If any compound has a % D > 90%, estimate positive results (J) and reject nondetects (R).

If any compound has r < 0.995, estimate positive results and nondetects.

A separate worksheet should be filled for each initial curve

All criteria were metX
Criteria were not met
and/or see below

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
	_reporting_limit -	_No_action_ta	ken,_professional_judg	several_analytes_detected ment
Field/Equipmen				
DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
No_field/trip/equ	uipment_blanks	_analyzed_with	n_this_data_package	

All criteria were met _X
Criteria were not met
and/or see below

VB. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

ALs = 10x the amount of common contaminants (methylene chloride, acetone, 2-butanone, and toluene)

ALs = 5x for any other compounds

Specific actions are as follows:

If the concentration is < sample quantitation limit (SQL) and \le AL, report the compound as not detected (U) at the SQL.

If the concentration is \geq SQL but \leq AL, report the compound as not detected (U) at the reported concentration.

If the concentration is ≥ SQL and > AL, report the concentration unqualified.

Notes:

High and low level blanks must be treated separately

Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

All criteria were met _	X_	
Criteria were not met		
and/or see below		

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery.

Matrix: solid/aqueous

CAMPI E ID

		1,2
		0.4

SURROGATE COMPOUND

ACTION

1,2-DICHLOROETHANE- Toluene- 4-BFB d8

_Surrogate_recoveries_within_laboratory_control_limits				
QC Limits* (Air)				
LL_to_UL70to_130	_70to_13070to_130			

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 80 120 % for aqueous and 70 130 % for solid samples.

Actions:

QUALITY	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

Surrogate action should be applied:

If one or more surrogate in the VOC fraction is out of specification, but has a recovery of > 10%.

If any one surrogate in a fraction shows < 10 % recovery.

All criteria were met
Criteria were not met
and/or see belowN/A

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

1. MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

MS OR MSD	COMPOUND	0/ D	DDD	QC LIMITS	ACTION
WIS OR WISD	COMPOUND	70 K	מרט	QC LIIVII 13	ACTION
MS/MSD_	_are_not_required_as	_part_of_l	Method_	TO-15;_blank_sp	ike_used_to_assess
accuracy_					

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (UJ).

If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).

If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

A separate worksheet should be used for each MS/MSD pair.

All criteria were met
Criteria were not met
and/or see belowN/A

VII. B MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD – Unspiked Compounds

It should be noted that Method TO-15 does not specify a MS/MSD criteria for the unspiked compounds in the sample. A %RSD of < 50% has therefore been utilized as professional judgment.

If all target analytes were spiked in the MS/MSD, this review element is not applicable.

List the %RSD of the compounds which do not meet the criteria.

Sample ID:			Matrix/Level/Unit:			
COMPOUND	SAMPLE CONC.	MS CONC.	MSD CONC.	% RSD	ACTION	
		- 6		11120-120-1		
		<i>A</i>				
				n		
1						

Actions:

^{*} If the % RSD > 50, qualify the positive result in the unspiked samples as estimated (J).

^{*} If the % RSD is not calculated (NC) due to nondetected value, use professional judgment to qualify the data.

All criteria were met _X
Criteria were not met
and/or see below

VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD? Yes or No. If no make note in data review memo.

List the %R of compounds which do not meet the criteria

LCS ID	COMPOUND	% R	QC LIMIT
LCS/LCSD_(Blank_	spike)_analyzed_in_this_data	_package%_recoverie	s_and_RPD
within_laboratory_co	ontrol_limits_except_for_the_c	cases_described_in_this	_document
1607235D-17A_	Bromoform	136_%	70130
	α-chlorotoluene	135_%	70130
1607235D-17A	Bromoform	132_%	70130
	a-chlorotoluene	136_%	70130

Note: No action taken, analytes not detected in affected samples.

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (j) and reject nondetects (R).

If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? Yes or <u>No.</u>

If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

		All criteria were met Criteria were not met and/or see belowX
IX.	FIELD/LABORATORY DUPLICATE PRECISION	
	Sample IDs:1607235D-01A/1607235D-06A Sample IDs:LCS/LCSD	Matrix:Air Matrix:Air

Field duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.

Suggested criteria: RPD ± 25% for air samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
Laboratory/field	duplicate anal			RPD with	in laboratory and method
	rformed criteri		the cases describ		
2-butanone	0.82	1.1	2.6	81 %	No action taken,
					concentration < 5 x SQL
Heptane	0.26	ND	0.27	-	No action taken, concentration < 5 x SQL

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

All criteria were met _	_X
Criteria were not met	
and/or see below	

X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area of samples which do not meet the criteria.

- * Area of +40% or -40% of the IS area in the associated calibration standard.
- * Retention time (RT) within ± 0.06 seconds of the IS area in the associated calibration standard.

DATE	SAMPLE ID	IS OUT	IS AREA	ACCEPTABLE A	ACTION
	andard_area_and_re ation_standards			_control_timits_for_b	oth_samples
Actions:					

1. IS actions should be applied to the compound quantitated with the out-of-control ISs

QUALITY	IS AREA < -40%	IS AREA > + 40%
Positive results	J	J
Nondetected results	R	ACCEPT

2. If a IS retention time varies more than 0.330 seconds, the chromatographic profile for that sample must be examined to determine if any false positive or negative exists. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for the sample fraction.

All i	crite	ia w	ere	met	_X_
Crit	eria	wer	e no	t me	l
and	Vor s	ee l	sela	W	

XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

1607235D-01A

Freon 11

RF = 4.10416

[] = (278125)(5.0)/(95419)(4.10416)

= 3.551 ppbv OK

All criteria were metX	
Criteria were not met	
and/or see below	

XII.	OHAN	TITATION	LIMITS
All.	MOUIA		

A. Dilution performed

SAMPLE ID	DILUTION FACTOR	REASONS FOR DILUTION
All samples dil	uted by a factor of less th	nan 1.71.
		100
		3

3.	Percent Solids		
	List samples which have ≤ 50 % solids		
		Ti Si	10

Actions:

If the % solids of a soil sample is 10-50%, estimate positive results (J) and nondetects (UJ) If the % solids of a soil sample is < 10%, estimate positive results (J) and reject nondetects (R)

	Project Number:1607235E Date:07/09-12/2016
REVIEW OF VOLATILE ORGANIC PATTHE following guidelines for evaluating volatile organics were created actions. This document will assist the reviewer in using profession decision and in better serving the needs of the data users. The sample USEPA data validation guidance documents in the following order "Compendium Method TO-15. Determination of Volatile Organic Compecially-Prepared Canisters and Analyzed By Gas Chromatogy January, 1999"; USEPA Hazardous Waste Support Branch. Valid Analysis of Ambient Air in Canisters by Method TO-15, (SOP # HW-3 QC criteria and data validation actions listed on the data review works document, unless otherwise noted. The hardcopied (laboratory name) _EurofinsAir_Toxics reviewed and the quality control and performance data summarized. The	ated to delineate required validation al judgment to make more informed e results were assessed according to er of precedence: QC criteria from mpounds (VOCs) In Air Collected In raphy/Mass Spectrometry (GC/MS), ating Air Samples. Volatile Organic 11. Revision #4. October, 2006). The sheets are from the primary guidance data package received has been
Lab. Project/SDG No.:1607235E No. of Samples:6	Sample matrix:Air
Trip blank No.: Field blank No.: Equipment blank No.: Field duplicate No.: 1607235E-08A/1607235E-13A	
X Holding TimesX	Laboratory Control Spikes Field Duplicates Calibrations Compound Identifications Compound Quantitation Quantitation Limits
Definition of Qualifiers: J- Estimated results U- Compound not detected R- Rejected data UJ- Estimated nondetect Reviewer: Adad Maat	
Date:	

DATA COMPLETENESS

MISSING INFORMATION	DATE LAB. CONTACTED	DATE RECEIVED
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All criteria were met _	X	_
Criteria were not met		
and/or see below	_	

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE ANALYZED	pН	ACTION
			-	
		mended method holdin	g time. A	Il summa canisters received
in good condition	15.		1	
				20 8

<u>Criteria</u>

Aqueous samples – 14 days from sample collection for preserved samples (pH \leq 2, 4°C), no air bubbles.

Aqueous samples -7 days from sample collection for unpreserved samples, 4° C, no air bubbles. Soil samples -7 days from sample collection.

Cooler temperature (Criteria: 4 ± 2 °C): N/A – summa canisters

Actions

If the VOCs vial(s) have air bubbles, estimate positive results (J) and reject nondetects (R). If the % solids of soil samples is 10-50%, estimates positive results (J) and nondetects (UJ) If the % solid of soil samples is < 10%, estimate positive results (J) and reject nondetects (R). If holding times are exceeded but < 14 days beyond criteria, estimate positive results (J) and nondetects (UJ).

If holding times are exceeded but < 28 days beyond criteria, estimate positive results (J) and reject nondetects (R).

If holding times are grossly exceeded (> 28 days beyond criteria), reject all results (R).

If samples were not iced or if the ice were melted (> 10°C), estimate positive results (J) and nondetects (UJ).

Al	criteria were met	х_
Criteria were	not met see below	

GC/MS TUNING

The assessment of the standard tuning QC limit		s to determine if the sample inst	rumentation is within the
_X The BFB perform	nance results w	ere reviewed and found to be with	in the specified criteria.
XBFB tuning was	performed for e	very 24 hours of sample analysis.	
If no, use professional j qualified or rejected.	iudgment to del	termine whether the associated d	ata should be accepted,
List	the	samples	affected:
			_

If mass calibration is in error, all associated data are rejected.

All criteria were met _X
Criteria were not met
and/or see below

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:	04/07/2016
Dates of continuing calibrat	tion:07/19/2016
Instrument ID numbers:	_MSD-P
Matrix/Level:	Air/low

DATE	LAB FILE ID#	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED
Initial and c	ontinuing calibratio	ons meet method speci	fic requirements.	

Note:

Criteria

All RFs must be > 0.05 regardless of method requirements for SPCC.

All %RSD must be \leq 15 % regardless of method requirements for CCC.

All %Ds must be \leq 30% regardless of method requirements for CCC.

Method TO-15 does not specify criterion for the curve correlation coefficient (r). A limit for r of \geq 0.995 has therefore been utilized as professional judgment.

Actions

If any compound has an initial RF or a continuing RF of < 0.05, estimate positive results (J) and reject nondetects (R), regardless of method requirements.

If any compound has a %RSD > 15%, estimate positive results (J) and use professional judgment to qualify nondetects.

If any compound has a %RSD > 90%, estimate positive results (J) and reject nondetects (R).

If any compound has a % D > 30%, estimate positive results (J) and reject nondetects (R).

If any compound has a % D > 30%, estimate positive results (J) and nondetects (UJ).

If any compound has a % D > 90%, estimate positive results (J) and reject nondetects (R).

If any compound has r < 0.995, estimate positive results and nondetects.

A separate worksheet should be filled for each initial curve

All criteria were metX	
Criteria were not met	
and/or see below	

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
below_the_	reporting_limit.	_No_action_tal	ken,_professional_judg 	several_analytes_detected_ ment
Field/Equipment/				
DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS

All criteria were met _	X_
Criteria were not met	2000
and/or see below	

VB. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

ALs = 10x the amount of common contaminants (methylene chloride, acetone, 2-butanone, and toluene)

ALs = 5x for any other compounds

Specific actions are as follows:

If the concentration is < sample quantitation limit (SQL) and \le AL, report the compound as not detected (U) at the SQL.

If the concentration is \geq SQL but \leq AL, report the compound as not detected (U) at the reported concentration.

If the concentration is ≥ SQL and > AL, report the concentration unqualified.

Notes:

High and low level blanks must be treated separately

Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES
					- ONE
					STATE OF THE PARTY
				300	
		- 4			
	1000				
- E					
9					

All criteria were met _X_	_
Criteria were not mel	
and/or see below	

ACTION

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

SURROGATE COMPOUND

List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery. Matrix: solid/aqueous

	9011100	CONTROLLIE COM COME				
	1,2-DICHLOROETHANE- d4	Toluene- d8	4-BFB			
_Surrogate_reco	overies_within_laboratory_contr	ol_limits				
QC Limits* (Air)			Ŷ			
LL_to_U	L70to_130	_70to_13	1070to_130			

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 80 120 % for aqueous and 70 130 % for solid samples.

Actions:

SAMPLE ID

QUALITY	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	ΠΊ	Accept

Surrogate action should be applied:

If one or more surrogate in the VOC fraction is out of specification, but has a recovery of > 10%.

If any one surrogate in a fraction shows < 10 % recovery.

All criteria were met	
Criteria were not met	
and/or see belowN/A	

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

1. MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

MS OR MSD	COMPOUND	0/ D	DDD	OOLIMITO	ACTION
M2 OK M2D	COMPOUND	% K	RPU	QC LIMITS	ACTION
MS/MSD_	are_not_required_as	_part_of_!	Viethod_	TO-15;_blank_spi	ike_used_to_assess_
		-		-	

Actions:

QUALITY	%R <ll< th=""><th>%R > UL</th></ll<>	%R > UL
Positive results	J	J
Nondetects results	R	Accept

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (UJ).

If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).

If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

A separate worksheet should be used for each MS/MSD pair.

All criteria were met
Criteria were not met
and/or see below N/A

VII. B MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD - Unspiked Compounds

It should be noted that Method TO-15 does not specify a MS/MSD criteria for the unspiked compounds in the sample. A %RSD of < 50% has therefore been utilized as professional judgment.

If all target analytes were spiked in the MS/MSD, this review element is not applicable.

List the %RSD of the compounds which do not meet the criteria.

Sample ID:			Matrix/Le	vel/Unit	
COMPOUND	SAMPLE CONC.	MS CONC.	MSD CONC.	% RSD	ACTION
		-370-99			
	350				

Actions:

^{*} If the % RSD > 50, qualify the positive result in the unspiked samples as estimated (J).

^{*} If the % RSD is not calculated (NC) due to nondetected value, use professional judgment to qualify the data.

All criteria were metX	
Criteria were not met	
and/or see below	

VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD? Yes or No. If no make note in data review memo.

List the %R of compounds which do not meet the criteria

	LCS ID	COMPOUND	% R	QC LIMIT
LCS/LCSI within_lab	D_(Blank_spike) oratory_control_	_analyzed_in_this_data_package. limits_except_for_the_cases_desc	_%_recoveries_ cribed_in_this_d	and_RPDocument
16072		ChloromethaneVinyl_chloride	_147_% _133_%	_70130 _70130
16072		Chloromethane Vinyl_chloride	142_% 134_%	70130 _70130
		Ethanol	_134_%	_70130

Note: No action taken, chloromethane and vinyl chloride not detected in affected samples. Results for Ethanol qualified as estimated (J) in affected samples.

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (j) and reject nondetects (R).

If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? Yes or <u>No</u>. If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

		All criteria were met Criteria were not met and/or see belowX_	
X.	FIELD/LABORATORY DUPLICATE PRECISION		
	Sample IDs:1607235E-01A/1607235E-06A Sample IDs:LCS/LCSD	Matrix:Air	r r

Field duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information. Suggested criteria: RPD \pm 25% for air samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
1 aboraton /Fold d	lumlianta anali	mad with thi	a data a actuaca	DDD	in laboration, and mathed
					nin laboratory and method
performed criteria except in the cases described in this document.					
1607235E-01A/1607	7235E-06A				
2-butanone	0.82	1.1	2.6	81 %	No action taken, concentration < 5 x SQL
Heptane	0.26	ND	0.27	-	No action taken, concentration < 5 x SQL

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

All criteria were met _X
Criteria were not met
and/or see below

X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area of samples which do not meet the criteria.

- * Area of +40% or -40% of the IS area in the associated calibration standard.
- * Retention time (RT) within \pm 0.06 seconds of the IS area in the associated calibration standard.

DATE	SAMPLE ID	IS OUT	IS AREA	ACCEPTABLE RANGE	ACTION
	andard_area_and_re ation_standards				both_samples
Actions:					

1. IS actions should be applied to the compound quantitated with the out-of-control ISs

QUALITY	IS AREA < -40%	IS AREA > + 40%
Positive results	J	J
Nondetected results	R	ACCEPT

2. If a IS retention time varies more than 0.330 seconds, the chromatographic profile for that sample must be examined to determine if any false positive or negative exists. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for the sample fraction.

All criteria were metX
Criteria were not met
and/or see below

XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

1607235E-08A

Acetone

RF = 0.67262

[] = (24366)(25.0)/(83554)(0.67262)

= 10.84 ppbv OK

All criteria were met _X
Criteria were not met
and/or see below

XII.	OU	ANTI	TATI	ON	LIN	AITS
Alt.	- UU	\sim IVII	1×11	CIN	LIB	//// 5

A. Dilution performed

SAMPLE ID	DILUTION FACTOR	REASONS FOR DILUTION
All samples dil	uted by a factor of less th	an 2.47.
	7500	
	100000	
To the second		

Percent Solids	
List samples which have ≤ 50 % solids	
	_
	_
	_

Actions:

If the % solids of a soil sample is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solids of a soil sample is < 10%, estimate positive results (J) and reject nondetects (R)

	Project Number:1607235F Date:07/09-12/2016
REVIEW OF VOLATILE ORGANIC F The following guidelines for evaluating volatile organics were cre actions. This document will assist the reviewer in using profession decision and in better serving the needs of the data users. The sam USEPA data validation guidance documents in the following ore "Compendium Method TO-15. Determination of Volatile Organic C Specially-Prepared Canisters and Analyzed By Gas Chromato January, 1999"; USEPA Hazardous Waste Support Branch. Vali Analysis of Ambient Air in Canisters by Method TO-15, (SOP # HW QC criteria and data validation actions listed on the data review wor document, unless otherwise noted. The hardcopied (laboratory name) _EurofinsAir_Toxics reviewed and the quality control and performance data summarized.	eated to delineate required validation and judgment to make more informed ple results were assessed according to der of precedence: QC criteria from compounds (VOCs) In Air Collected In graphy/Mass Spectrometry (GC/MS), idating Air Samples. Volatile Organic -31. Revision #4. October, 2006). The ksheets are from the primary guidance data package received has been
Lab. Project/SDG No.:1607235F	Sample matrix:Air
Trip blank No.: Field blank No.: Equipment blank No.: Field duplicate No.:1607235F-01A/1607235A-06A;_16072	
X Holding TimesXX GC/MS TuningXX Internal Standard PerformanceXX BlanksX	Laboratory Control Spikes Field Duplicates Calibrations Compound Identifications Compound Quantitation Quantitation Limits
Definition of Qualifiers: J- Estimated results U- Compound not detected R- Rejected data UJ- Estimated nondetect	
Reviewer: // W/W/ M/WWW	

DATA COMPLETENESS

MISSING INFORMATION	DATE LAB. CONTACTED	DATE RECEIVED
		-1-

All	crite	ria w	ere i	met,	_X
Cri	teria	were	e noi	me	
and	d/or:	see b	elov	v	

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

		1	F THE STREET STREET
within the recomm	nended method holding	time All	cumma canisters received
he Chain of Cust sample tag with	tody (COC) information regard to sample identifi	for sam	ple B18AA-071216 did not
	he Chain of Cust sample tag with	he Chain of Custody (COC) information	within the recommended method holding time. All he Chain of Custody (COC) information for same sample tag with regard to sample identification. I and report the sample. No action taken.

Criteria

Aqueous samples – 14 days from sample collection for preserved samples (pH \leq 2, 4°C), no air bubbles.

Aqueous samples -7 days from sample collection for unpreserved samples, 4°C, no air bubbles. Soil samples -7 days from sample collection.

Cooler temperature (Criteria: 4 + 2 °C): N/A - summa canisters

<u>Actions</u>

If the VOCs vial(s) have air bubbles, estimate positive results (J) and reject nondetects (R).

If the % solids of soil samples is 10-50%, estimates positive results (J) and nondetects (UJ)

If the % solid of soil samples is < 10%, estimate positive results (J) and reject nondetects (R).

If holding times are exceeded but < 14 days beyond criteria, estimate positive results (J) and nondetects (UJ).

If holding times are exceeded but < 28 days beyond criteria, estimate positive results (J) and reject nondetects (R).

If holding times are grossly exceeded (> 28 days beyond criteria), reject all results (R).

If samples were not iced or if the ice were melted (> 10°C), estimate positive results (J) and nondetects (UJ).

criteria were met _ not met see below	<u>X</u> _

GC/MS TUNING

List	the	samples	affected:
if no, use profession qualified or rejected		mine whether the associated data	should be accepted,
XBFB tuning	was performed for eve	ry 24 hours of sample analysis.	
_XThe BFB p	erformance results were	e reviewed and found to be within the	e specified criteria.
The assessment o standard tuning QC		to determine if the sample instrume	entation is within the

If mass calibration is in error, all associated data are rejected.

All criteria were met _X
Criteria were not met
and/or see below

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:	07/19/2016
Dates of continuing calibration:_	07/19/2016
Instrument ID numbers:MSI	D-14
Matrix/Level:Ai	r/low

DATE	LAB ID#	FILE	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED
One point calibration	calibration retention	n. Initia times n	and continuing calibra neet method specific re	ntions meet method sp quirements.	pecific requirements. Initial

Criteria

All RFs must be > 0.05 regardless of method requirements for SPCC.

All %RSD must be ≤ 15 % regardless of method requirements for CCC.

All %Ds must be ≤ 30% regardless of method requirements for CCC.

Method TO-15 does not specify criterion for the curve correlation coefficient (r). A limit for r of \geq 0.995 has therefore been utilized as professional judgment.

Actions

If any compound has an initial RF or a continuing RF of < 0.05, estimate positive results (J) and reject nondetects (R), regardless of method requirements.

If any compound has a %RSD > 15%, estimate positive results (J) and use professional judgment to qualify nondetects.

If any compound has a %RSD > 90%, estimate positive results (J) and reject nondetects (R).

If any compound has a % D > 30%, estimate positive results (J) and reject nondetects (R).

If any compound has a % D > 30%, estimate positive results (J) and nondetects (UJ).

If any compound has a % D > 90%, estimate positive results (J) and reject nondetects (R).

If any compound has r < 0.995, estimate positive results and nondetects.

A separate worksheet should be filled for each initial curve

All criteria were met _X
Criteria were not met
and/or see below

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

DATE ANALYZED	LABID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
		_method_specil	fic_criteria	
Field <u>/</u> Equipment				
DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
_No_field/trip/eq	uipment_blank	s_analyzed_wit	th_this_data_package	

All criteria were metX
Criteria were not met
and/or see below

VB. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

ALs = 10x the amount of common contaminants (methylene chloride, acetone, 2-butanone, and toluene)

ALs = 5x for any other compounds

Specific actions are as follows:

If the concentration is < sample quantitation limit (SQL) and \le AL, report the compound as not detected (U) at the SQL.

If the concentration is \geq SQL but \leq AL, report the compound as not detected (U) at the reported concentration.

If the concentration is \geq SQL and > AL, report the concentration unqualified.

Notes:

High and low level blanks must be treated separately

Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES
					- CONTROL
			-	pres.	
			NESTA .	<u> </u>	
	1000				

All criteria were metX
Criteria were not met
and/or see below

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

SURROGATE COMPOUND

List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery. Matrix: solid/aqueous

O' ''''' EE 12	0011100	~12 00mm 0	OND	AUTION
	1,2-DICHLOROETHANE- d4	Toluene- d8	4-BFB	
_Surrogate_rec	overies_within_laboratory_contro	ol_limits		
QC Limits* (Air)				

- QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 80 120 % for aqueous and 70 130 % for solid samples.

_70__to_130_ _70__to_130__

Actions:

SAMPLE ID

QUALITY	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

Surrogate action should be applied:

LL_to_UL___70__to_130___

If one or more surrogate in the VOC fraction is out of specification, but has a recovery of > 10%.

If any one surrogate in a fraction shows < 10 % recovery.

All criteria were met
Criteria were not met
and/or see belowN/A

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

1. MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

List the %Rs, RPD of the compounds which do not meet the criteria. Sample ID: Matrix/Level:					
MS OR MSD	COMPOUND	% R	RPD	QC LIMITS	ACTION
	_are_not_required_as_	•		•	ike_used_to_assess

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (UJ).

If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).

If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

A separate worksheet should be used for each MS/MSD pair.

^{*} QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.

^{*} If QC limits are not available, use limits of 70 – 130 %.

VII. B MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD - Unspiked Compounds

It should be noted that Method TO-15 does not specify a MS/MSD criteria for the unspiked compounds in the sample. A %RSD of < 50% has therefore been utilized as professional judgment.

If all target analytes were spiked in the MS/MSD, this review element is not applicable.

List the %RSD of the compounds which do not meet the criteria.

Sample ID:			Matrix/Le	vel/Unit	
COMPOUND	SAMPLE CONC.	MS CONC.	MSD CONC.	% RSD	ACTION
				To Carlo	
			-		
	1				
··········	100		<u> </u>		
4					
Sec.					

Actions:

^{*} If the % RSD > 50, qualify the positive result in the unspiked samples as estimated (J).

^{*} If the % RSD is not calculated (NC) due to nondetected value, use professional judgment to qualify the data.

All criteria were met
Criteria were not met
and/or see below N/A

VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD? Yes or No. If no make note in data review memo.

List the %R of compounds which do not meet the criteria

	LCS ID	COMPOUND	% R	QC LIMIT
No_LCS	/LCSD_(Blank_	spike)_analyzed_in_this_da	ta_package	
- 100 - 100 -				

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (j) and reject nondetects (R).

If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? Yes or <u>No</u>. If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

		All criteria were met Criteria were not met and/or see below	
IX.	LABORATORY DUPLICATE PRECISION		
	Sample IDs:1607235F-01A/1607235A-06A Sample IDs:1607235F-08A/1607235F-13A	Matrix:Air Matrix:Air	

Field duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.

Suggested criteria: RPD \pm 25% for air samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL, ppbv	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
Field duplicate		case	ata package. RP es described in th		n laboratory control limits except in the iment.
Methanol	240	240	ND	-	No action taken, Professional judgment. Sample/duplicate concentration < 5 x SQL.

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

All criteria were metX
Criteria were not met
and/or see below

X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area of samples which do not meet the criteria.

- * Area of +40% or -40% of the IS area in the associated calibration standard.
- * Retention time (RT) within \pm 0.06 seconds of the IS area in the associated calibration standard.

DATE	SAMPLE ID	IS OUT	IS AREA	ACCEPTABLE RANGE	ACTION
	andard_area_and_reation_standards				
Actions:					

1. IS actions should be applied to the compound quantitated with the out-of-control ISs

QUALITY	IS AREA < -40%	IS AREA > +40%
Positive results	J	J
Nondetected results	R	ACCEPT

2. If a IS retention time varies more than 0.330 seconds, the chromatographic profile for that sample must be examined to determine if any false positive or negative exists. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for the sample fraction.

All criteria were met _X
Criteria were not met
and/or see below

XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

1607235F-08A

Methanol

RF = 0.945361

[] = (27204)(400)/(112717)(0.945361)

= 102.1 ppbv OK

All criteria were met _X
Criteria were not met
and/or see below

XII.	OHANTI	TATION I	IMITS
/\ .	WUCHTI	1/3/1/2/19/1	

A. Dilution performed

SAMPLE ID	DILUTION FACTOR	REASONS FOR DILUTION
All samples dil	uted by a factor of less th	nan 2.48.
		Tank Car
		Total Control of the
Ü.		
		13
	15353	
Total Control of the		

Percent Solids
List samples which have ≤ 50 % solids

Actions:

If the % solids of a soil sample is 10-50%, estimate positive results (J) and nondetects (UJ) If the % solids of a soil sample is < 10%, estimate positive results (J) and reject nondetects (R)

Project Number: 1607235G Date: 07/09-12/2016
ANIC PACKAGE ere created to delineate required validation of pressional judgment to make more informed the sample results were assessed according to order of precedence: QC criteria from ASTM hydrocarbons in refinery and other sources uctivity detector (TCD) and/or flame ionization alysis of Ambient Air in Canisters by Method C criteria and data validation actions listed on tument, unless otherwise noted. data package received has been arized. The data review for VOCs included:
Sample matrix:Air
607235F-08A/1607235F-13A
X Laboratory Control SpikesX Field DuplicatesX CalibrationsX Compound IdentificationsX Compound QuantitationX Quantitation Limits

DATA COMPLETENESS

MISSING INFORMATION	DATE LAB. CONTACTED	DATE RECEIVED
		\

All criteria were met _X
Criteria were not met
and/or see below

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

in good conditions. The match the entry on the	he Chain of Cust sample tag with	tody (COC) information regard to sample identi	for san	all summa canisters received nple B18AA-071216 did not The information on the COC stody was missing method
				ract or verbal agreement. No

<u>Criteria</u>

Aqueous samples – 14 days from sample collection for preserved samples (pH \leq 2, 4°C), no air bubbles.

Aqueous samples – 7 days from sample collection for unpreserved samples, 4°C, no air bubbles. Soil samples- 7 days from sample collection.

Cooler temperature (Criteria: 4 + 2 °C): N/A - summa canisters

Actions

If the VOCs vial(s) have air bubbles, estimate positive results (J) and reject nondetects (R).

If the % solids of soil samples is 10-50%, estimates positive results (J) and nondetects (UJ)

If the % solid of soil samples is < 10%, estimate positive results (J) and reject nondetects (R).

If holding times are exceeded but < 14 days beyond criteria, estimate positive results (J) and nondetects (UJ).

If holding times are exceeded but < 28 days beyond criteria, estimate positive results (J) and reject nondetects (R).

If holding times are grossly exceeded (> 28 days beyond criteria), reject all results (R).

If samples were not iced or if the ice were melted (> 10°C), estimate positive results (J) and nondetects (UJ).

All criteria were metN/A Criteria were not met see below					
trumentation is within the					
N/A_ The BFB performance results were reviewed and found to be within the specified criteria.					
N/A_ BFB tuning was performed for every 24 hours of sample analysis.					
data should be accepted,					
affected:					

If mass calibration is in error, all associated data are rejected.

Note: Samples analyzed using GC with either TCD or FID detection.

All criteria were metX
Criteria were not met
and/or see below

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:_	01/15/16
Dates of continuing calibra	ation:_07/19/16
Instrument ID numbers:	GC-10
Matrix/Level:	Air/low

DATE	LAB ID#	FILE	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED
Initial and	continui	ng calib	rations meet method s	pecific requirements.	Initial calibration retention
times mee	t method	specific	requirements.		

Criteria

All RFs must be > 0.05 regardless of method requirements for SPCC.

All %RSD must be < 15 % regardless of method requirements for CCC.

All %Ds must be < 30% regardless of method requirements for CCC.

Method TO-15 does not specify criterion for the curve correlation coefficient (r). A limit for r of \geq 0.995 has therefore been utilized as professional judgment.

Actions

If any compound has an initial RF or a continuing RF of < 0.05, estimate positive results (J) and reject nondetects (R), regardless of method requirements.

If any compound has a %RSD > 15%, estimate positive results (J) and use professional judgment to qualify nondetects.

If any compound has a %RSD > 90%, estimate positive results (J) and reject nondetects (R).

If any compound has a % D > 30%, estimate positive results (J) and reject nondetects (R).

If any compound has a % D > 30%, estimate positive results (J) and nondetects (UJ).

If any compound has a % D > 90%, estimate positive results (J) and reject nondetects (R).

If any compound has r < 0.995, estimate positive results and nondetects.

A separate worksheet should be filled for each initial curve

All criteria were met _X
Criteria were not met
and/or see below

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
			fic_criteria	
Field <u>/</u> Equipmen				
DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
_No_field/trip/ed	quipment_blank	s_analyzed_wi	th_this_data_package	
			MRSS/Agr	

All criteria were metX
Criteria were not met
and/or see below

VB. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

ALs = 10x the amount of common contaminants (methylene chloride, acetone, 2-butanone, and toluene)

ALs = 5x for any other compounds

Specific actions are as follows:

If the concentration is < sample quantitation limit (SQL) and \le AL, report the compound as not detected (U) at the SQL.

If the concentration is \geq SQL but \leq AL, report the compound as not detected (U) at the reported concentration.

If the concentration is \geq SQL and > AL, report the concentration unqualified.

Notes:

High and low level blanks must be treated separately

Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES
				100	
	"		- 200		

	-112				
- 4					
1000					

All criteria were metN/A
Criteria were not met
and/or see below

ACTION

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

SURROGATE COMPOUND

List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery. Matrix: solid/aqueous

_Surrogate_standard	ds_not_requir	red_by_the_me	thod		
QC Limits* (Air)	to	to	to	to	

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 80 120 % for aqueous and 70 130 % for solid samples.

Actions:

SAMPLE ID

QUALITY	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

Surrogate action should be applied:

If one or more surrogate in the VOC fraction is out of specification, but has a recovery of > 10%.

If any one surrogate in a fraction shows < 10 % recovery.

All criteria were met
Criteria were not met
and/or see belowN/A

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

List the %Rs, RPD of the compounds which do not meet the criteria.

Sample ID:			Matrix	/Level:		
MS OR MSD	COMPOUND	% R	RPD	QC LIMITS	ACTION	
	not_required_as_part				k_spike_used_to_asse	SS_

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 70 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (UJ).

If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).

If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

A separate worksheet should be used for each MS/MSD pair.

All criteria were met
Criteria were not met
and/or see belowN/A

VII. B MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD - Unspiked Compounds

It should be noted that Method TO-15 does not specify a MS/MSD criteria for the unspiked compounds in the sample. A %RSD of < 50% has therefore been utilized as professional judgment.

If all target analytes were spiked in the MS/MSD, this review element is not applicable.

List the %RSD of the compounds which do not meet the criteria.

Sample ID:			Matrix/Le	vel/Unit	
COMPOUND	SAMPLE CONC.	MS CONC.	MSD CONC.	% RSD	ACTION
					B
			-		2
	Ø.				

Actions:

^{*} If the % RSD > 50, qualify the positive result in the unspiked samples as estimated (J).

^{*} If the % RSD is not calculated (NC) due to nondetected value, use professional judgment to qualify the data.

All criteria were met _X
Criteria were not met
and/or see below

VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD? Yes or No. If no make note in data review memo.

List the %R of compounds which do not meet the criteria

	LCSID	COMPOUND	% R	QC LIMIT
LCS/LCS	SD_(Blank_spike	e)_analyzed_in_this_data	_package;_recoveries_a	ind_RPD
within_la	boratory_contro	l_limits		
			-	

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit
- If QC limits are not available, use limits of 70 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (j) and reject nondetects (R).

If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? Yes or No. If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

		All criteria were metX Criteria were not met and/or see below
IX.	FIELD/LABORATORY DUPLICATE PRECISION	
	Sample IDLCS/LCSD_(07/19/16) Sample ID1607235F-01A/1607235A-06A Sample ID1607235F-08A/1607235F-13A	Matrix:Air Matrix:Air Matrix:Air

Field/laboratory duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.

Suggested criteria: RPD \pm 25% for air samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL, %	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION		
	Field/laboratory duplicates analyzed as part of this data package. LCS/LCSD (laboratory) RPD within laboratory control limits. Field duplicate RPD within laboratory control limits except in the cases described in this document.						
1607235F-08A	1607235F-08A/1607235F-13A						
Methanol	0.00024	0.000096	0.00016	50	No action, professional judgment. Sample/duplicate concentration < 5 x SQL		

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

All criteria were metN/A
Criteria were not met
and/or see below

X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area of samples which do not meet the criteria.

- * Area of +40% or -40% of the IS area in the associated calibration standard.
- * Retention time (RT) within \pm 0.06 seconds of the IS area in the associated calibration standard.

DATE	SAMPLE ID	IS OUT	IS AREA	ACCEPTABLE RANGE	ACTION
	andard_not_required			intified_by_externa	i_standard
Actions:					

1. IS actions should be applied to the compound quantitated with the out-of-control ISs

QUALITY	IS AREA < -40%	IS AREA > + 40%
Positive results	J	J
Nondetected results	R	ACCEPT

 If a IS retention time varies more than 0.330 seconds, the chromatographic profile for that sample must be examined to determine if any false positive or negative exists. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for the sample fraction.

All criteria were metX
Criteria were not met
and/or see below

XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

Blank Spike (LCS)

Methane

RF = 226379851

[] = (2311842354)/(226379851)

= 10.2 % OK

	All criteria were metX Criteria were not met and/or see below	-
1		
		A
	THE REAL PROPERTY.	
10.		
	<u> </u>	
	72	
		98

XII.	QUAN	HIAI	ION	LIMI	ŀ	ì

A. Dilution performed

SAMPLE ID	DILUTION FACTOR	REASONS FOR DILUTION
	uted by a factor of less th	
•		
776		
	Total Control	
1		
Marie Comments		

	Percent Solids	
	List samples which have ≤ 50 % solids	93
		30.7

Actions:

If the % solids of a soil sample is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solids of a soil sample is < 10%, estimate positive results (J) and reject nondetects (R)

	Project Number:1607228B Date:07/09-12/2016
	Jac01103-1212010
REVIEW OF VOLATILE ORGANIC P. The following guidelines for evaluating volatile organics were creactions. This document will assist the reviewer in using profession decision and in better serving the needs of the data users. The samp USEPA data validation guidance documents in the following ord "Compendium Method TO-15. Determination of Volatile Organic Conspecially-Prepared Canisters and Analyzed By Gas Chromatog January, 1999"; USEPA Hazardous Waste Support Branch. Validanalysis of Ambient Air in Canisters by Method TO-15, (SOP # HW-QC criteria and data validation actions listed on the data review work document, unless otherwise noted. The hardcopied (laboratory name) _EurofinsAir_Toxics	eated to delineate required validation nal judgment to make more informed ple results were assessed according to der of precedence: QC criteria from ompounds (VOCs) In Air Collected In graphy/Mass Spectrometry (GC/MS) dating Air Samples. Volatile Organic 31. Revision #4. October, 2006). The ksheets are from the primary guidance data package received has been
Lab. Project/SDG No.:1607228B No. of Samples:14	Sample matrix:Air
Trip blank No.: Field blank No.:1607228B-15A Equipment blank No.: Field duplicate No.:1607228B-01A/1607228B-06A; _1607228B	
X Holding Times X X GC/MS Tuning X X Internal Standard Performance X X Blanks X	Laboratory Control Spikes Field Duplicates Calibrations Compound Identifications Compound Quantitation Quantitation Limits
Definition of Qualifiers: I- Estimated results J- Compound not detected R- Rejected data JJ- Estimated nondetect	
Reviewer: Rafael Sufacet 08/04/2016	

DATA COMPLETENESS

MISSING INFORMATION	DATE LAB. CONTACTED	DATE RECEIVED
4		
N .		
<u>\</u>		
	4	
	1	
V		<u> </u>
		<u> </u>
		_
		A
		-

All criteria were metX
Criteria were not met
and/or see below

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE ANALYZED	pН	ACTION
and was not wit	lyzed within the recom hin 4±2 °C. Coolant in mples analyzed within 7	the form of blue ice w	ig time. T	Temperature was measured ent. Analysis proceeded. No

Criteria

Aqueous samples – 14 days from sample collection for preserved samples (pH \leq 2, 4°C), no air bubbles.

Aqueous samples -7 days from sample collection for unpreserved samples, 4° C, no air bubbles. Soil samples -7 days from sample collection.

Cooler temperature (Criteria: 4 ± 2 °C): 9.8°C

Actions

If the VOCs vial(s) have air bubbles, estimate positive results (J) and reject nondetects (R). If the % solids of soil samples is 10-50%, estimates positive results (J) and nondetects (UJ) If the % solid of soil samples is < 10%, estimate positive results (J) and reject nondetects (R). If holding times are exceeded but < 14 days beyond criteria, estimate positive results (J) and nondetects (UJ).

If holding times are exceeded but < 28 days beyond criteria, estimate positive results (J) and reject nondetects (R).

If holding times are grossly exceeded (> 28 days beyond criteria), reject all results (R). If samples were not iced or if the ice were melted (> 10°C), estimate positive results (J) and nondetects (UJ).

	Crit	eria were not met see below
GC/MS TUNING		
The assessment of the tuning results is to determine standard tuning QC limits	e if the sample instru	mentation is within the
XThe BFB performance results were reviewed a	and found to be within	the specified criteria.
XBFB tuning was performed for every 24 hours	of sample analysis.	
If no, use professional judgment to determine wheth qualified or rejected.	er the associated dat	a should be accepted,
List the	samples	affected:

If mass calibration is in error, all associated data are rejected.

All criteria were metX
Criteria were not met
and/or see below

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:	07/12-13/16
Dates of continuing calibratio	n:07/20/16
Instrument ID numbers:	MSD-6
Matrix/Level:	_Air/low

DATE	LAB	FILE	CRITERIA OUT	COMPOUND	SAMPLES
	ID#		RFs, %RSD, %D, r		AFFECTED
lattal as	1		4 41	10	l late a second
times me	et method	l specific	auons meet method s c requirements. Desorp fic requirements.	tion efficiency verifica	nitial calibration retention tion for Naphthalene was

Criteria

All RFs must be > 0.05 regardless of method requirements for SPCC.

All %RSD must be \leq 15 % regardless of method requirements for CCC.

All %Ds must be \leq 30% regardless of method requirements for CCC.

Method TO-15 does not specify criterion for the curve correlation coefficient (r). A limit for r of \geq 0.995 has therefore been utilized as professional judgment.

Actions

If any compound has an initial RF or a continuing RF of < 0.05, estimate positive results (J) and reject nondetects (R), regardless of method requirements.

If any compound has a %RSD > 15%, estimate positive results (J) and use professional judgment to qualify nondetects.

If any compound has a %RSD > 90%, estimate positive results (J) and reject nondetects (R).

If any compound has a % D > 30%, estimate positive results (J) and reject nondetects (R).

If any compound has a % D > 30%, estimate positive results (J) and nondetects (UJ).

If any compound has a % D > 90%, estimate positive results (J) and reject nondetects (R).

If any compound has r < 0.995, estimate positive results and nondetects.

A separate worksheet should be filled for each initial curve

All criteria were met
Criteria were not met
and/or see belowX

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

DATE ANALYZED	LABID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
All_metho	d_blank_meeth_m	ethod_speci	fic_criteria_except_the_	cases_described_in_this
_07/20/16	_1607228B-16A	_Air/low	Naphthalene	_0.0086_ppbv
			entration below reporting	
Field/Equipmen	t/Trip blank			
DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
_data_package	•			t_blanks_analyzed_with_this
		-		

All criteria were met _X
Criteria were not met
and/or see below

VB. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

ALs = 10x the amount of common contaminants (methylene chloride, acetone, 2-butanone, and toluene)

ALs = 5x for any other compounds

Specific actions are as follows:

If the concentration is \leq sample quantitation limit (SQL) and \leq AL, report the compound as not detected (U) at the SQL.

If the concentration is \geq SQL but \leq AL, report the compound as not detected (U) at the reported concentration.

If the concentration is \geq SQL and > AL, report the concentration unqualified.

Notes:

High and low level blanks must be treated separately

Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES
					and the same of th
					-55
				-	
			100		
		100			
	- Table				
- 1					
No.					
No.					

All criteria were met _	Х_	
Criteria were not met		
and/or see below	_	

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery.

Matrix: solid/aqueous

CARROLEID

SAMPLE ID	อบหา	ACTION		
	1,2-DICHLOROETHAI d4	VE- Toluene- d8	4-BFB	
	8			
_Surrogate_reco	veries_within_laboratory_	control_limits		
QC Limits* (Air)				
LL to UI	- to	50 to 15	i0 to	

- * QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
- * If QC limits are not available, use limits of 80 120 % for aqueous and 70 130 % for solid samples.

Actions:

QUALITY	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

Surrogate action should be applied:

If one or more surrogate in the VOC fraction is out of specification, but has a recovery of > 10%.

If any one surrogate in a fraction shows < 10 % recovery.

All criteria were met
Criteria were not met
and/or see belowN/A

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

1. MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

List the %Rs, RPD of the compounds which do a Sample ID:				not meet the criteria. Matrix/Level:			
MS OR MSD	COMPOUND	% R	RPD	QC LIMITS	ACTION		
	are_not_required_as	-		· ·	ike_used_to_assess		
* QC limit	s are laboratory in-ho	ouse perfoi	mance o	riteria, LL = lowe	r limit, UL = upper lim	nit.	

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

If QC limits are not available, use limits of 70 – 130 %.

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (UJ).

If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).

If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

A separate worksheet should be used for each MS/MSD pair.

All criteria were met _____ Criteria were not met and/or see below __N/A__

VII. B MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD - Unspiked Compounds

It should be noted that Method TO-15 does not specify a MS/MSD criteria for the unspiked compounds in the sample. A %RSD of < 50% has therefore been utilized as professional judgment.

If all target analytes were spiked in the MS/MSD, this review element is not applicable.

List the %RSD of the compounds which do not meet the criteria.

Sample ID:			Matrix/Le	vel/Unit:	
COMPOUND	SAMPLE CONC.	MS CONC.	MSD CONC.	% RSD	ACTION
		2 777 30			
		P			
- 42					
E SA					

Actions:

^{*} If the % RSD > 50, qualify the positive result in the unspiked samples as estimated (J).

^{*} If the % RSD is not calculated (NC) due to nondetected value, use professional judgment to qualify the data.

All criteria were met _X_	
Criteria were not met	
and/or see below	

VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

LCCID

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD? Yes or No. If no make note in data review memo.

List the %R of compounds which do not meet the criteria

COMPOUND

	LCS ID	COMPOUND	% R	QC LIMIT
LCS/LCSE)_(Blank_spike)_	_analyzed_in_this_da	ta_package;_%_recov	eries_and_RPD
within_labo	oratory_control_l	imits		

- QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper
- If QC limits are not available, use limits of 70 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (i) and reject nondetects (R).

If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? Yes or No. If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

		All criteria were met Criteria were not met and/or see belowX
łX.	LABORATORY/FIELD DUPLICATE PRECISION	
	Sample IDs:_1607228B-01A/1607228B-06A Sample IDs:_1607228B-09A/1607228B-11A	Matrix:Air Matrix:Air

Field/laboratory duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information. Suggested criteria: RPD \pm 25% for air samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
Field/laboratory			data package. R		hin the method performance criteria locument.
1607228B-01A/1	 607228B-	06A		1	<u>. </u>
Naphthalene	0.017	0.031	ND	-	No action, professional judgment. Field duplicate concentration – ND/sample concentration < 5 SQL

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

All criteria were metX
Criteria were not met
and/or see below

X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area of samples which do not meet the criteria.

- * Area of +40% or -40% of the IS area in the associated calibration standard.
- * Retention time (RT) within \pm 0.06 seconds of the IS area in the associated calibration standard.

DATE	SAMPLE ID	IS OUT	IS AREA	ACCEPTABLE RANGE	ACTION
	andard_area_and_reation_standards			_control_limits_for_	both_samples
Actions:	V) ())(400				

1. IS actions should be applied to the compound quantitated with the out-of-control ISs

QUALITY	IS AREA < -40%	IS AREA > + 40%
Positive results	J	J
Nondetected results	R	ACCEPT

If a IS retention time varies more than 0.330 seconds, the chromatographic profile for that sample must be examined to determine if any false positive or negative exists. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for the sample fraction.

All criteria were metX
Criteria were not met
and/or see below

XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

1607228B-01A

Naphthalene

RF = 1.93557

[] = (42303)(36)/(440247)(1.93557)

= 1.787 ng OK

All criteria were metX
Criteria were not met
and/or see below

XII.	OU	ANT	ITATI	ΩN.	LIMIT	TS.
All.	WU		пап	UIV.	LIIVII	IΟ

A. Dilution performed

SAMPLE ID	DILUTION FACTOR	REASONS FOR DILUTION
No dilution per		
1000		
Table 194		

3.	Percent Solids
	List samples which have ≤ 50 % solids

Actions:

If the % solids of a soil sample is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solids of a soil sample is < 10%, estimate positive results (J) and reject nondetects (R) $\,$